Leader-Follower Interactions in Times of Increasing Distance: Implications for Followers on the Task Level and the Relational Level

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Chapter 1: General Introduction

Across organizational contexts, work settings are rapidly changing all over the globe—yielding a multitude of new work models, such as flexible schedules, virtual teams, and regulations regarding work from home. Recently, these changes in the work environment have been further accelerated by the COVID-19 pandemic, which forced many organizations to send employees into home-office (Bouziri et al., 2020; Pulido-Martos et al., 2021). Even toward the end of the pandemic, the number of people working from home was significantly higher than before the pandemic—in 2022, on average, 22.6% of the European Union's working population worked from home at least occasionally—almost double what it was before (Statistisches Bundesamt, 2023).

These changes entail positive consequences for both employees and organizations, such as more flexibility, less time spent commuting, and a bigger pool of potential workers due to the possibility of drawing on a geographically dispersed workforce. However, they also bring about challenges related to leaders' and followers'[1] collaboration—with more employees working from home (or at different places than their leaders), on average, the spatial distance between leaders and followers increases (Antonakis & Atwater, 2002; Bell & Kozlowski, 2002; Rudolph et al., 2021). As a result, followers will likely experience some uncertainty about their work on different levels. On a *task level*, followers might perceive ambiguity regarding what they are expected to do and how to do it (i.e., low goal and norm clarity). This might ultimately threaten their performance in the sense of assuming responsibility for and engaging in their tasks (e.g., Hu & Liden, 2011; Locke & Latham, 1990; Maier & Brunstein, 2001). On a *relational level*, distance from their leader might also result in some uncertainty regarding the way their leader feels about them in their working relationship (i.e., whether the leader cares about and feels responsible for the follower or if they focus on their own goals)—posing the threat of impairing leader-follower relationships (cf. Fousiani & Wisse, 2022) and impeding followers' performance as well (cf. Martin et al., 2016).

Likely, these challenges arise due to changing interactions between leaders and followers (Kahai, 2013). As such, a greater (physical) distance decreases the opportunities for unplanned or spontaneous interactions (Brunelle, 2013; Kahai, 2013; Kelley & Kelloway, 2012)—resulting in the fact that followers' interactions with their leader will often be less *frequent*. Therefore, the massive changes taking place in the contemporary work environment

[1] While the terms "leader" and "follower" can encompass supervisors and subordinates across different hierarchical levels in an organization, the current dissertation refers to the supervisory level—that is, employees and their *direct* supervisors. Furthermore, the term "follower" is used interchangeably with "employee" and "subordinate", and always refers to a person reporting to a direct supervisor that has decisional power over them.

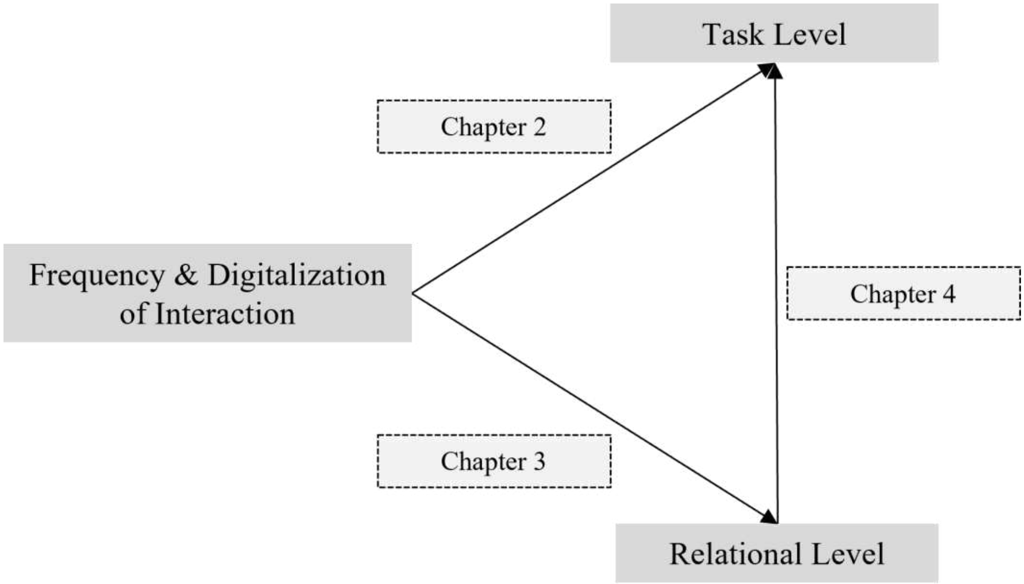
might make it more challenging for leaders and followers to stay in touch with each other. However, staying in touch (i.e., having frequent contact) provides more opportunities for exchange between leaders and followers (e.g., Bui et al., 2019; Shockley et al., 2021); accordingly, frequent contact might be exactly what is needed when working together from a distance in order for followers to gain clarity about their work-related goals, norms, and own responsibilities, as well as about their leader's feelings about them. Interestingly, however, despite its current relevance, the frequency of leader-follower interaction received little attention in the literature thus far (cf. Shockley et al., 2021). The present dissertation sought to address this research gap.

Beyond the frequency of interaction, due to the increasing distance, leader-follower interactions nowadays also often take place *digitally*—that is, mediated through information technology, such as video calls, email, or telephone. As digitalized contact is often more complicated and transmits fewer nonverbal cues (Daft & Lengel, 1986; Daft et al., 1987), this aspect of leader-follower interaction might negatively affect followers' clarity about their leader's expectations and feelings towards them. Indeed, a digitalized work environment has been argued to make leadership success more challenging (Bell & Kozlowski, 2002), for instance, due to greater barriers to fostering trust and more possibilities for misunderstandings as well as reduced follower performance (Liao, 2017; Podsakoff et al., 1996).

To address these ideas theoretically and empirically, the current dissertation investigated how both (1) the frequency and (2) the digitalization of leader-follower interaction relate to followers' clarity about their tasks and their leader's feelings about them in the contemporary work environment. Doing so, *Chapter 2* examined how these two aspects predict outcomes on a task level—that is, whether followers know what to do (i.e., goals and norms are clear) and feel responsible for engaging in their tasks. *Chapter 3* then focused on the role of frequency and digitalization for outcomes on a relational level (i.e., whether followers perceive their leader to care about and feel responsible for them and/or as feeling in control while focusing on goal achievement). Lastly, in *Chapter 4*, the current dissertation links the investigated outcomes on a relational and task level to each other, testing whether followers' perception of how their leader feels about them may also contribute to their engagement in their tasks and well-being (see Figure 1.1). Thereby, the current dissertation aims to contribute to a better understanding of how effective leader-follower collaboration can be ensured nowadays despite the increasing (physical) distance between them.

Figure 1.1

Overall Model Tested in the Current Dissertation



Leader-Follower Interactions Are Inherent in Leadership

Researchers have long been interested in the question of what makes leadership successful, often focusing on and highlighting the effectiveness of specific different leadership strategies. The term leadership refers to "the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives" (Yukl, 2013, p. 7). As such, leadership requires leaders and followers to interact with each other to establish a relationship and to complete tasks successfully. Accordingly, a high *frequency of interaction* between leaders and followers might act as a common thread among leadership strategies assuming effectiveness (cf. Decuypere & Schaufeli, 2020). Therefore, notwithstanding the relevance of specific leadership strategies, in the present dissertation, I focus on the role of the frequency of leader-follower interaction, which refers to the "perceived degree to which leaders interact with their followers" (Antonakis & Atwater, 2002, p. 686). As indicated above, frequent leader-follower interactions might constitute an important means by which followers gain clarity about their tasks and their relation to their leader. Indeed, communicating with followers has been argued to constitute a major part of leaders' tasks and can, therefore, be seen as inherent in the concept of leadership (Jablin, 1979; Nifadkar et al., 2019; Yammarino et al., 2001). Hence, before elaborating on how exactly frequency of interaction might mitigate the challenges associated with the massive changes happening in the contemporary work environment, I will first outline how research on leadership in organizations has been conceptualized, how it has developed through time, and which leadership concepts have been the most influential in the literature in the last decades.

Since the beginning of academic research on leadership, there has been a multitude of different approaches to explaining which leaders are the most effective. Approaches in the early 20th century assumed that leaders possess specific *traits* that render them natural leaders, such as personality, motives, and skills (Yukl & Gardner, 2020). However, these approaches have seen criticism, ultimately leading to their discontinuation, as research was not able to identify such traits. Consequently, the behavioral approaches emerged, which investigated specific leader *behaviors* as predictors of leader effectiveness, such as consideration and initiating structure (e.g., Hemphill & Coons, 1957; Stogdill, 1963). These two aspects of leader behavior differentiate between task-oriented behaviors (i.e., initiating structure), such as clarifying roles, goals, and tasks, and person-oriented behaviors (i.e., consideration) that encompass behaviors targeting the relational side of leadership, such as supporting followers, as well as providing praise and recognition (Yukl & Gardner, 2020).

Over the last decades, research shifted in favor of leadership styles that focus not only on the leader, but also take followers' role into account. Especially transformational leadership constitutes one of the most influential theories of leadership, as part of the Full-Range Leadership Theory (FRLT; Bass, 1985; Bass & Avolio, 1994, 1997). The FRLT distinguishes three forms of leadership. The two most prominent are transformational and transactional leadership. The latter refers to motivating followers by contingent reward as well as passive and active management by exception. Therefore, it relies on extrinsic incentives and corrective action. Transactional leadership was argued to be the foundation of leadership concepts preceding transformational leadership (Bass & Avolio, 1997)—which encompasses intrinsically motivating followers through idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Bass & Avolio, 1994, 1997). In short, transformational leadership extended previous leadership concepts by incorporating the idea of transforming followers, in contrast to the mere fulfillment of transactional obligations (Antonakis & Atwater, 2002). This style of leadership is often referred to as the most effective form of leadership (for a review, see van Knippenberg & Sitkin, 2013). Indeed, there are numerous studies showing the effectiveness of transformational leadership, for instance due to its positive association with outcomes such as task performance (Liao & Chuang, 2007) and team potency (Bass et al., 2003; Schaubroeck et al., 2007; for a review, see Wang et al., 2011). Finally, laissez-faire leadership constitutes the third aspect of the FRLT and is conceptualized as the absence of leadership, as it involves leaders' passive indifference about the task and followers (Yukl & Gardner, 2020).

There exist several further leadership styles that show similarities with transformational leadership. For instance, charismatic leadership refers to a leadership style that suffuses followers with a sense of purpose (Avolio et al., 1999)—albeit the concept of charismatic leadership is often considered to be inherent in transformational leadership (e.g., van Knippenberg & Sitkin, 2013). Further approaches overlapping with transformational leadership are the so-called values-based approaches which argue that leaders' values and beliefs influence and motivate their followers. These approaches entail concepts such as servant leadership and ethical leadership (for an overview, see Yukl & Gardner, 2020). Servant leadership refers to the leader as "first among equals" and emphasizes the leader's obligation to place followers' needs before their own (Graham, 1991; for a review, see van Dierendonck, 2011). As such, it expands transformational leadership by the component of social responsibility (Graham, 1991; van Dierendonck, 2011). Servant leadership is, for instance, associated with follower outcomes such as better performance and positive job attitudes (for a summary, see van Dierendonck, 2011). Similar to servant leadership, social responsibility also constitutes a core component of ethical leadership. This concept highlights the need of "responsibility as an obligation" (Den Hartog, 2015, p. 413), therefore focusing on leader integrity and fairness (Kalshoven et al., 2011; Treviño et al., 2000, 2003; for a review, see Den Hartog, 2015). Ethical leadership has also been linked to a multitude of positive follower outcomes, such as more follower effort and better performance, as well as more satisfaction with the leader and more perceived leader effectiveness (for a summary, see Den Hartog, 2015).

One important aspect that becomes evident when taking a closer look at these concepts as well as their outcomes is their substantial *conceptual overlap*. Certainly, each concept offers some unique characteristics that differentiate it from other concepts. For instance, both servant and ethical leadership indeed share a common ground with transformational leadership in the sense that they focus on the development and growth of followers, rather than mainly on the leader. However, they also show several differences; for instance, transformational leadership has been argued not to be inherently ethical, as the transformational characteristics of this leadership style may also be used in order to achieve unethical or selfish goals (Den Hartog, 2015; van Dierendonck, 2011). The intentions of fairness and morality are, however, key elements of both servant and ethical leadership, distinguishing these concepts from transformational leadership. Ethical and servant leadership, in turn, also show conceptual differences in that servant leadership centers on followers' development and empowerment, while ethical leadership rather emphasizes the importance of ethical conduct (Yukl & Gardner, 2020).

Nevertheless, the large conceptual overlap between different concepts of the values-based leadership approaches as well as transformational leadership yields theoretical and empirical problems (Antonakis et al., 2016; Banks et al., 2016; Decuypere & Schaufeli, 2020; Fischer & Sitkin, 2023; van Knippenberg & Sitkin, 2013; Yukl & Gardner, 2020). As such, all these concepts (e.g., transformational, charismatic, servant, and ethical leadership) share a common ground in the sense that the underlying assumption of each theory is its inherent effectiveness; hence, the outcomes of those theories (i.e., by and large, effectiveness) are not independent of the concept (see van Knippenberg & Sitkin, 2013). Indeed, the concepts show substantial overlap with one another, not only on a theoretical but also on an empirical level (e.g., Banks et al., 2016; DeRue et al., 2011). As a potential solution to this major problem, some researchers in the field call for the investigation of "more clearly defined and empirically distinct aspects of leadership" (van Knippenberg & Sitkin, 2013, p. 2).

This raises the question of what these distinct aspects might be, especially with regard to followers' contemporary work-related challenges. An overarching theme in the theories described above is that to be effective, leaders not only need to clarify to followers what is expected of them, but also to act as role models for followers (e.g., in terms of engagement; Decuypere & Schaufeli, 2020) as well as mind their needs and act responsibly towards them. More specifically, followers themselves need to *perceive* these aspects of their work and their relationship with their leader, as the influence leadership wields on followers results from "follower *perceptions* [emphasis added] of leader behavior and follower attributions of leader dispositional characteristics, behaviors, and performance" (Antonakis & Atwater, 2002, p. 676). Following this argument, followers need clarity regarding what they are expected to achieve in a work context (i.e., on a task level) but also need opportunities to *perceive* their leader (i.e., on a relational level, e.g., regarding their leader's responsibility; Den Hartog, 2015; van Dierendonck, 2011) for leadership to yield positive outcomes. Yet, the increasing distance between leaders and followers might make it more difficult for followers to gain exactly that clarity—as I argue, for which the frequency and digitalization of interaction with their leader may play a major role. For this reason, rather than investigating established leadership styles, I focus on the frequency (and digitalization) of interaction and their role for followers' clarity on the task and relational level—as these aspects constitute rather objective factors and are, thus, affected to a lesser extent by the methodological issues elaborated above.

Distance in Leadership and the Relevance of Frequent Interactions

Leaders and followers working increasingly often from home or at different places mainly refers to the *physical* distance between them. As mentioned above, a greater physical distance between leaders and followers may be detrimental to the influence of leadership on followers, both on the task and on the relational level—for instance, due to fewer opportunities for the direct contact that is necessary for leading effectively and reduced leader influence (Bass, 1990; Kerr & Jermier, 1978). However, physical distance is not the only dimension of the larger concept of leader distance, which rather constitutes a multidimensional construct. Antonakis and Atwater (2002) developed a comprehensive model of leader distance in organizations, in which they suggested that leader distance is composed of three theoretically distinct dimensions. First, physical distance refers to the actual (spatial) distance between leader and follower. Second, perceived social or psychological distance refers to perceived differences between leader and follower regarding characteristics that play out in a social context, such as status, authority, and social standing (see also Napier & Ferris, 1993). Third and last, the authors suggested the perceived frequency of leader-follower interaction as a dimension of leader-follower distance. Antonakis and Atwater (2002) argue that the different dimensions of distance can have diverging effects on leadership outcomes. With regard to social distance, for instance, they suggest that both socially distant and socially close leaders can be seen as charismatic leaders—albeit distant leaders will likely affect followers on a group level, and close leaders rather on the individual level (see also Shamir, 1995). Accordingly, social leader distance would not necessarily imply negative outcomes. Regarding physical distance, however, the authors conclude that, by and large, it seems to negatively affect leadership outcomes (see also Kerr & Jermier, 1978). Yet, they suggest that this effect can potentially be overcome (see also Howell & Hall-Merenda, 1999).

This is where I propose the frequency of interaction might come into play. As physical distance is often characterized by less frequent interactions[2] (Brunelle, 2013; Kelley & Kelloway, 2012), increasing this frequency might counteract the negative influence of physical distance—as frequent interactions with their leader likely enhance followers' clarity on both the task and the relational level (i.e., what they need to do and how do it, and regarding their leader's understanding of their working relationship with them). In line with this idea, frequent leader-follower interaction has been argued to be particularly important in physically distant

[2] Here, it should be noted that Antonakis and Atwater (2002) consider the frequency of interaction as *theoretically independent* of physical distance—that is, leaders and followers can interact frequently as well as infrequently, irrespective of the physical distance between them (Antonakis & Atwater, 2002). However, expecting a negative relation between those variables seems rational, as there will most likely be fewer spontaneous and unplanned interactions with increasing physical distance (Brunelle, 2013; Kelley & Kelloway, 2012, see also Bass, 1998).

settings, as it might contribute to the perceived social presence of the leader (Avolio et al., 2014).

In sum, frequent interactions may help followers and leaders overcome the challenges of working across physical distance. Its potential relevance notwithstanding, however, the frequency of leader-follower interaction remains a scarcely researched variable (cf. Shockley et al., 2021)—especially regarding its role for followers' clarity on both the task and the relational level. Thus, it is vital to understand how followers are affected by the frequency of interaction with their on both these levels to ensure effective leader-follower collaboration in times of increasing (physical) distance between them.

How Frequent Interactions Might Contribute to Followers' Clarity About Tasks

Despite leader-follower interactions being argued to contribute to task outcomes in the organizational context (e.g., Antonakis & Atwater, 2002), an overarching model describing the processes involved therein does not exist (especially with regard to individual performance; Shockley et al., 2021). For this reason, prior work investigating communication and organizational functioning (Bui et al., 2019; Marlow et al., 2018; Shockley et al., 2021) has drawn from theoretical approaches to the role of communication, for instance, from the input-output-process model of virtual teams (Dulebohn & Hoch, 2017), which argues that communication as a behavioral process constitutes a key aspect of the organization which contributes to team performance. Furthermore, research on the functional role of communication suggests that communication impacts task-related outcomes by improving task coordination, preventing and clarifying misunderstandings, and exchanging information (Bales, 1950, 1953; Bui et al., 2019; Fletcher & Major, 2006; Marlow et al., 2017; Salas et al., 1997; for an overview, see Shockley et al., 2021). Accordingly, frequent interactions (communication) between leaders and followers might also contribute to task-related outcomes by the processes suggested above. However, as Marlow et al. (2018) noted, communication does not constitute a unidimensional variable. As such, there are several different aspects of communication that might yield differential outcomes. Prior work highlighted primarily the importance of the *quality* of interaction, which is referred to as "the extent to which a person feels that they received the information needed to do their job" (Shockley et al., 2021, p. 1468). Empirical evidence suggests that the quality of leader-follower interaction and team interaction is linked to, for instance, better performance and lower burnout (González-Romá & Hernández, 2014; Marlow et al., 2018; Shockley et al., 2021). Relations between the *quantity* (i.e., the frequency) of interaction and improved performance have also been found (e.g., Marlow et al., 2018;

Shockley et al., 2021), albeit they are weaker than with the quality of interaction. However, as the sheer frequency of interaction constitutes a variable that is arguably easier to modify for leaders than followers' feelings of comprehension, it might prove a variable of higher importance in the context of seeking to bridge leader-follower distance. For this reason, the current dissertation focuses on the *frequency* of leader-follower interaction rather than the quality.

But how precisely might more frequent interactions between leaders and followers contribute to better task-related outcomes? As mentioned above, interaction has the ability to improve performance and organizational functioning because it enables leaders and followers to coordinate tasks, prevent and clarify potential misunderstandings, and exchange information each side needs to complete their work. This ability might be achieved through greater opportunities for the sharing of knowledge and information, which in turn contributes to better performance (Bui et al., 2019). Although Bui et al. (2019) referred to team interactions rather than to dyadic leader-follower interactions, the same processes might occur when looking at the dyadic level—by interacting more frequently, leaders and followers should experience more opportunities for sharing work-related information with each other, and for posing and answering questions. Especially in the context of increasing leader-follower distance and the COVID-19 pandemic, which forced numerous employees to work from home, this is of particular importance—as for many employees, working from home depicted a new and unfamiliar work environment, thereby potentially reducing clarity about which goals to follow, how to complete tasks, and which expectations to meet. However, in order to ensure a high level of performance, exactly these aspects—ensuring that followers know what they have to do, how to do it, and assume responsibility for their tasks—are of the utmost importance (Locke & Latham, 2002; van Knippenberg & Stam, 2014). Supporting this argument, Yukl (2013) argued that "even a subordinate who is highly competent and motivated may fail to achieve a high level of performance if confused about responsibilities and priorities. Such confusion results in misdirected effort and neglect of important responsibilities in favor of less important ones" (p. 59). This further highlights the importance of followers' clarity about their *goals* and *norms* for ensuring performance, especially in an environment where ambiguity is likely elevated. Accordingly, the present dissertation investigated the role of frequency (and digitalization) for goal and norm clarity (as outcomes on a task level).

Goals are defined as "the object or aim of an action" (Latham & Locke, 2013, p. 4). As such, goal clarity refers to followers' clarity about and understanding of what they are expected to achieve in a work context. With regard to the organizational context, such objects can entail, for instance, a specific number of new customers to be acquired, the filling of vacant positions, or the demanded number of publications in scientific journals. Having clarity about these goals has been argued to contribute to performance. For instance, goal-setting theory (Locke & Latham, 1990) suggests that clear goals increase motivation by directing team members' attention and encouraging them to be persistent. The ambiguity of goals, in contrast, lowers performance by inducing uncertainty, thereby disrupting the motivational mechanisms mentioned above (Rainey & Jung, 2015). Indeed, there is research linking goal clarity to (team) performance (Hu & Liden, 2011; Rainey & Jung, 2015; van der Hoek et al., 2018). Accordingly, ensuring *goal clarity* is of particular relevance in the context of increasing leader-follower distance, where uncertainty is potentially higher than in traditional work settings. The frequency of interaction might constitute a means by which this can be achieved—as through more frequent interactions, leaders and followers likely get more opportunities for sharing work-related information with each other, clarifying misunderstandings, as well as asking and answering questions.

Norms, in contrast, are the shared patterns of behaviors and strategies that should be adopted (Cialdini & Trost, 1998). While the term "norm" encompasses a wide array of different concepts, such as cultural norms and ethical norms, the current dissertation investigates norms in terms of the procedures followers are expected to use while striving for goal attainment in the organizational context. Accordingly, *norm clarity* refers to the *how* of goal attainment rather than the *what*, therefore being synonymous with process clarity (e.g., Hu & Liden, 2011; Sawyer, 1992). Besides followers knowing *what* they have to do in a work context (i.e., goal clarity), knowing *how* they have to do it (i.e., norm clarity) constitutes an equally important prerequisite for performance at work. Indeed, it has been argued that clear procedures (i.e., norms) contribute to performance because they predefine how goals are to be pursued, thereby facilitating their achievement (Knight et al., 2001). In accord with this, norm clarity has been shown to be related to performance alongside goal clarity (Hu & Liden, 2011). Accordingly, both goal and norm clarity serve as important predictors of follower performance. While these two variables seem to be closely related, they constitute two distinct aspects of the concept of role ambiguity (Sawyer, 1992). Indeed, it is possible to know what one's goals are and where one's responsibilities lie, yet, how to accomplish those goals might be vague (Sawyer, 1992)—which is another reason why these variables should be investigated in conjunction.

However, followers being aware of their goals as well as of the processes required to reach those goals is not sufficient to ensure high performance. For instance, Hu & Liden (2011) stated that "in the absence of goal commitment, goal and process clarity become irrelevant" (p.

851). Accordingly, the positive impact of goal and norm clarity on performance can only manifest when responsibility regarding the goals at hand is present (Locke & Latham, 1990; Maier & Brunstein, 2001). For this reason, it is vital to followers' performance that they also feel responsible to engage on behalf of the tasks and goals they are expected to achieve. Therefore, followers' perceived *task responsibility* constitutes the third task-related outcome of frequency of interaction that is investigated in the first empirical chapter of the current dissertation.

Taken together, a greater frequency of leader-follower interaction might contribute to followers goal clarity, norm clarity, and perceived task responsibility. Especially in the context of increasing leader-follower distance—where goals, norms, and task responsibilities might be vague—more frequent interactions could provide the opportunities for work-related exchange needed to ensure that followers are aware of these aspects of their work and can take over responsibility for them. However, thus far, the link between frequency and these task-related outcomes has not been investigated, despite their implications for performance (Anderson & Stritch, 2016; Raziq et al., 2018; Yukl & Gardner, 2020). In order to address this research gap, the first empirical chapter—*Chapter 2*—investigates whether the frequency of leader-follower interaction predicts the three task-related leadership outcomes follower goal clarity, norm clarity, and perceived task responsibility. Additionally, further examining the mechanism through which these relations might emerge, *Chapter 2* also addresses the question of whether frequency of interaction predicts the outcomes by means of more opportunities for work-related information sharing between leader and follower. In doing so, the first empirical chapter contributes to knowledge about whether and how followers' clarity about their goals and norms, as well as their feelings of responsibility can be ensured in times of a continuously changing work environment.

Considering How Digitalized Contact Relates to Followers' Clarity About Tasks

Besides decreasing frequency, a higher digitalization of interaction—that is, the relative amount of digital vs. face-to-face contact—is another implication of greater leader-follower distance, as contact over distance can only occur digitally (i.e., via a medium, such as email, video calls, or telephone; Avolio et al., 2001; Liao, 2017; Shamir; 1999). Consequently, the majority of organizations nowadays work with at least some degree of digitalized communication (Landers, 2019; Raghuram et al., 2019). What implications might this increase in digitalized contact have for making the goals and norms they are expected to follow, and the tasks to assume responsibility for clear to followers? How exactly digitalized contact might influence subsequent task-related outcomes is an unresolved matter (cf. Avolio et al., 2014). Some theoretical approaches to this issue argue for a negative influence of digitalization on task-related outcomes, others hypothesize that there might be advantages associated with interacting digitally, while still others assume that, nowadays, there might not be an effect at all. In the following, I will briefly touch on each of the perspectives in order to provide a comprehensive insight into this matter.

Approaches assuming a *negative influence* of digitalized contact argue that digitalized contact might impede leader-follower collaboration (e.g., Avolio et al., 2000; Purvanova & Bono, 2009; Bell & Kozlowski, 2002; Hoch & Kozlowski, 2014; Liao, 2017) because a virtual setting diminishes leaders' and followers' opportunities for engaging in direct observation and contact (Kiesler & Cummings, 2002). Media-richness-theory (Daft & Lengel, 1986; Daft et al., 1987) offers another approach to this issue by arguing that there exists considerable variability between different modes of interaction regarding the richness of the information that is transferred. For instance, face-to-face contact constitutes the "richest" mode of interaction, as it provides the most opportunities for transferring nonverbal cues, such as gestures and facial expressions, thereby limiting the equivocality of a message. Digitalized contact, in contrast, is argued to constitute a mode of interaction that is much less rich in the information that is transferred, because the transmission of nonverbal cues is severely constrained in a digital setting. As a result, the equivocality of messages increases, which might result in misunderstandings and ambiguity. In line with this, a higher amount of digitalization has been argued to have the potential to impede task coordination and information sharing (Kirkman et al., 2012; see also Cramton, 2001; Gibson & Cohen, 2003; Hertel et al., 2005). Supporting this argument, remote work has been shown to impede information sharing across a firm-wide network (Yang et al., 2022). Thus, according to these approaches, increased equivocality, less information richness, and fewer opportunities for direct leader-follower contact could hinder followers from attaining a lucid comprehension of their goals and norms and fully embracing their responsibilities if they interact digitally with their leader.

Approaches arguing for *diminished or nonexistent effects* of digitalized contact on leader-follower collaboration propose that the potential obstacles of virtual contact can be alleviated, for instance, through extra effort on the part of the leader (Purvanova & Bono, 2009). Furthermore, it needs to be recognized that many of the approaches arguing for a negative influence of virtual contact are up to several decades old, which is why the arguments presented by these approaches might not hold true anymore nowadays. In line with this, the social information processing model of media use (Fulk et al., 1987) posits that the perceived richness of information and the task equivocality of a specific medium is also influenced by several factors, such as experience with and attitudes towards the medium. Accordingly, with more and more people using digital media in the workplace as well as privately, the potential negative implications of digital contact might nowadays be mitigated (Ishii et al., 2019; Kwak, 2012). At this point, it is also important to point out that "digital contact" does not constitute a unidimensional construct but rather an umbrella term for contact via various forms of media, such as email, video calls, instant messaging, or the telephone (see above). These different forms of media likely also feature different amounts of (perceived) information richness and message equivocality (for an overview, see Ishii et al., 2019), and might, thus, also yield differential effects on task-related outcomes.

Going one step further, approaches arguing for *advantages* of digitalized contact point out that technology may increase the reachability and perceived ability of others (Avolio et al., 2014; Avolio & Kahai, 2003; Kahai, 2013; Oc & Bashshur, 2013), which might yield potential benefits for performance. However, as a caveat, potential downsides to stress levels come into consideration here (Avolio et al., 2014).

Taken together, how exactly digitalized contact might relate to followers' goal clarity, norm clarity, and perceived task responsibility is unclear. Due to the reasons elaborated above, however, a negative relation is conceivable (e.g., Liao, 2017; Podsakoff et al., 1996)—especially considering that the sudden shift to remote work due to the pandemic was new and unfamiliar territory for many employees. Consequently, in these times where the danger of followers experiencing uncertainty about their goals and responsibilities is present, the challenges associated with digital contact (Daft & Lengel, 1986; Daft et al., 1987) might hinder them from gaining a clear understanding of their goals and responsibilities. For this reason, *Chapter 2* also investigated how digitalization of interaction, besides frequency, predicts followers' goal clarity, norm clarity, and perceived task responsibility.

Beyond the Task Level: Distance Might Also Affect Followers' Leader Perception

Apart from the task level, it is also necessary to consider how the massive changes happening in the contemporary workplace might affect followers on a *relational* level—as a greater distance between leaders and followers will likely increase followers' feelings of uncertainty about their leader. While the greater contact associated with more traditional work settings (cf. Brunelle, 2013; Kahai, 2013; Kelley & Kelloway, 2012) provides followers with sufficient occasions to get an idea about their leader's feelings towards them, these occasions will most likely diminish with increasing (physical) distance. As a result, in the sense of "out of sight, out of mind", followers might perceive their leader as feeling less *responsible* for them, which might pose a problem for followers—as argued above, leader responsibility constitutes a main tenet in many leadership theories assuming effectiveness (e.g., Den Hartog, 2015; van Dierendonck, 2011). At the same time, followers will likely experience fewer incidents of their leader making use of the *opportunities* to reach own goals and to engage in favor of own tasks—which constitutes an important prerequisite for followers' engagement (cf. Decuypere & Schaufeli, 2020). Therefore, the present dissertation addresses the challenges physical distance entails for followers on a relational level with respect to perceived leader *opportunity* and *responsibility*. In this regard, I focus on the concept of leaders' opportunity and responsibility (as perceived by followers) as related to leader's understanding of the social power their position entails.

Social Power Resides in Leadership

Leadership positions are usually paralleled by the possession of social power (Rus et al., 2012), which is defined as asymmetric control over valued resources (Fiske & Berdahl, 2007). In the case of leaders in organizations, these valued resources (i.e., valued by followers) comprise, for instance, the ability to decide over work outcomes important for followers (e.g., pay raises). Importantly, power can be *construed* (i.e., cognitively interpreted) differently—as an *opportunity* to freely "make things happen" and/or as a *responsibility* to "take care of things" (De Wit et al., 2017; Sassenberg et al., 2012; Scholl et al., 2022).

Construing power as an opportunity to "make things happen" or as a responsibility to "take care of things" yields differential effects on powerholders. While a construal of power as opportunity generally makes the powerholder aware of their ability to freely focus on goal attainment, thereby facilitating action on the way to achieving a focal goal, a construal of power as responsibility often also makes the situation of those around them salient to the powerholder (for a summary, see Scholl et al., 2022). Prior work suggests that while powerholders typically recognize the opportunities their power provides, they often overlook their responsibility (see Scholl et al., 2022). If they do recognize the latter, however, a construal of power as responsibility (vs. opportunity) is beneficial for the way they interact and build a relationship with followers—such as taking advice more into account (De Wit et al., 2017) and being more willing to share resources fairly (De Cremer & van Dijk, 2008).

So far, most research on this matter focused on the powerholder (for an overview, see Scholl et al., 2022). How those on the other end of the power continuum (i.e., followers[3]) perceive powerholders' construal of power, however, is scarcely researched and mostly unknown (Fousiani & Wisse, 2022; Scholl et al., 2022). The current dissertation focuses on this perception of opportunity and responsibility among leaders (i.e., those typically high in power)—but from followers' perspective, to gain an idea about how followers perceive their their leader's understanding of their working relationship. Importantly, the frequency with which followers and leaders interact (and potentially the digitalization of their interaction) likely plays a role for followers' perception of their leader, and especially the way their leader feels towards them—as followers need to actually get *chances* to perceive and observe their leader's behaviors. Here, distance between leaders and followers might prove detrimental, as the above-mentioned chances for observing leaders' behaviors are likely severely limited. How do the frequency and digitalization with which leaders and followers interact with each other relate to this issue?

Just as frequency likely fosters task-related outcomes (see above, e.g., goal clarity), having more chances for interpersonal exchange (due to frequent interactions) might also help followers to gain clarity about how their leader understands the working relationship with them. In other words, having more interactions with their leader should help followers to gain a clear impression about how their leader feels about them—that is, whether the leader *cares* about their followers or if they are rather busy with other tasks and focus on goal attainment. In line with this idea, theoretical approaches to the role of interpersonal communication argue that it has the function of reducing one's perceived uncertainty about others (Berger & Calabrese, 1975; Berger et al., 1976). Importantly, however, beyond providing such chances to gain an impression of the leader, frequent interactions with their leader may also act as a social signal to followers that their leader *is* willing to invest and take the time for followers, that is, as a signal that the leader *does* care about them (i.e., construes power as responsibility). At the same time, more frequent interactions might also signal to followers that their leader *is* more focused on moving things forward regarding goal achievement and appreciates making use of the possibilities to do so (i.e., construes power as opportunity). Indeed, the increased perceived

[3] Here, it is important to point out that followers do not constitute people without power by any means. In some cases, followers can hold power over leaders as well (see Oc & Bashshur, 2013). For instance, how a leader is perceived by their followers can have far-reaching consequences for the former, as leaders that are perceived as competent are more likely to maintain their position than those that are perceived as incompetent (Yukl & Gardner, 2020). Nevertheless, this line of research is not part of the current dissertation. Hence, I focus solely on the formal power leaders hold over their followers due to their position in the organization.

social presence associated with frequent interactions (especially in physically distant settings; Avolio et al., 2014) might enhance this process.

Beyond a low frequency, also a higher digitalization of interaction leads to less information richness and fewer nonverbal cues (Daft & Lengel, 1986; Daft et al., 1987; Ishii et al., 2019)—which have been argued to reduce the perception of the social presence of the respective other (Fulk & Boyd, 1991). This should, in turn, exacerbate receiving an impression of their leader for followers, in the sense of perceiving leader opportunity and responsibility. In line with this idea, digital contact has been argued to hinder the building of relationships between employees (Kiesler et al., 1984).

Taken together, both the frequency and the digitalization of interaction between leaders and followers might influence followers on a relational level—that is, the extent to which they perceive that their leader feels in control on the way to goal attainment and how the leader cares about and feels responsible for them (i.e., construes their position as opportunity and/or responsibility). The second empirical chapter of the current dissertation, *Chapter 3*, addresses this idea by investigating how the frequency and digitalization of leader-follower interaction relate to leaders' opportunity and responsibility (as perceived by followers)—constructs highly relevant to organizational success (e.g., Fousiani & Wisse, 2022). Thereby, *Chapter 3* addresses the current dissertation's second goal—understanding how frequency and digitalization of interaction might affect followers regarding relational outcomes.

Linking Followers' Leader Perception to Followers' Task-Related Outcomes

What happens, however, when followers *do* perceive that their leader feels responsible for them and/or in control while pursuing goals—that is, what are the *implications* of followers' perceived leader opportunity and responsibility (besides better relationship quality; Fousiani & Wisse, 2022)? Does this motivate followers to focus on goal achievement themselves and to engage in their tasks? And does feeling that their leader perceives responsibility for them contribute to better well-being among followers? I address these questions in *Chapter 4*. I do so based on the notion that how followers perceive their leader (here, their leaders' opportunity and responsibility) is relevant for the following reasons.

Followers' leader perception is inherent in the leadership concept, as the impact of leadership on follower outcomes arises for a major part through follower perceptions (Černe et al., 2014). Theoretical approaches argue that this "trickle-down effect" of leadership exists due to social influence mechanisms (Bandura, 1977, 1986; Brown et al., 2005; Decuypere & Schaufeli, 2020; Sassenberg & Hamstra, 2017). For instance, leaders exert direct social influence on their followers through their authority over the latter, who, as a consequence, align their own behavior with their leader's (Sassenberg & Hamstra, 2017). Additionally, followers might adjust their behavior to how they perceive their leader to behave because leaders constitute attractive role models in the organizational context (Brown et al., 2005; Decuypere & Schaufeli, 2020; see also Bandura, 1977, 1986). This is due to the fact that a leader's position in the organization implies a certain amount of success, and that their behavior will likely have contributed to this success (Sassenberg & Hamstra, 2017). In line with these approaches, an extensive body of research on follower-perceived leader behaviors suggests that followers, indeed, often behave in line with the way that they perceive their leader to behave (for a summary, see Sassenberg & Hamstra, 2017). Referring to these approaches (Brown et al., 2005; Decuypere & Schaufeli, 2020; Sassenberg & Hamstra, 2017), it is conceivable that when followers perceive their leader as construing power as opportunity, they will likely infer that the behaviors associated with this power construal (i.e., behaviors directly aimed at goal attainment; Scholl et al., 2022) are expected and asked for and might, thus, strive after better goal attainment themselves (cf. Decuypere & Schaufeli, 2020). Accordingly, similar to the frequency of interaction, followers' perceived leader opportunity might affect them on a task level. However, while the task-related outcomes of frequency elaborated above constitute variables important for *enabling* better performance (i.e., whether followers feel *capable* and *responsible* to engage), it is also necessary to investigate followers' *work engagement* as a task-related outcome, thereby approaching the question of whether followers actually *do* engage. The importance of followers' work engagement, which can be defined as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli et al., 2002, p. 74), lies in its relevance to leadership and organizational success—as it has been linked to a multitude of positive work-related outcomes such as performance, organizational commitment, and employee effectiveness (Harter et al., 2002; Mackay et al., 2017; Rich et al., 2010; Xanthopoulou et al., 2009). For this reason, *Chapter 4* investigates whether followers *engage* more in their tasks when they perceive more leader opportunity.

What might, in contrast, be the implications of followers perceiving leader responsibility? First of all, perceiving that their leader feels responsible for them might *feel good* for followers—as they will presumably feel that their leader takes care of them. Supporting this idea, followers perceiving leader responsibility have been found to report better relationships with their leader (Fousiani & Wisse, 2022). Moreover, they will likely feel that they can approach their leader in case of problems and might, thus, experience less stress—as their leader might seem more approachable to them (cf. De Wit et al., 2017). These two aspects should ultimately contribute to followers' general *well-being*. Considering followers' well-being constitutes a vital matter for organizations, as several aspects of follower well-being, such as burnout and exhaustion, have been linked to negative work outcomes (e.g., lower job performance; Keijsers et al., 1995; Parker & Kulik, 1995; Wright & Cropanzano, 1998; for a review, see Halbesleben & Buckley, 2004). Therefore, in *Chapter 4*, the current dissertation investigates followers' well-being. Notably, well-being constitutes a multidimensional construct that entails both physical well-being, which refers to physical health and functioning, and psychological well-being, which concerns affective and cognitive processes (Grant et al., 2007; Warr, 2013). To do justice to this multidimensionality, I consider well-being in terms of general health, taking both physical as well as psychological aspects into account .

Taken together, followers' leader perception (i.e., regarding leaders' construal of power) might have subsequent implications for them on a task-related and also on a health-related level. The third empirical chapter, *Chapter 4*, targets this idea by investigating whether perceived leader opportunity and responsibility (i.e., the relational level) predict followers' work engagement (i.e., the task level) and well-being. In doing so, *Chapter 4* addresses the current dissertation's final goal—that is, linking the relational level with the task level, in order to contribute to an understanding of effective and healthy leader-follower working relationships.

The Current Dissertation

The decreasing frequency and increasing digitalization of leader-follower interaction resulting from physical distance likely bring uncertainty for followers in their wake—regarding what they are expected to do and how to do it (i.e., on a task level), and regarding the way their leader feels about them (i.e., on a relational level). Thus, understanding how these two aspects of leader-follower interaction are linked to outcomes on the task level and the relational level is crucial—so that leaders and followers can manage effective collaboration, despite the major changes they experience in today's work environment. The current dissertation targets exactly this issue, by investigating how followers might be affected by the frequency and digitalization of interaction with their leader (1) on a task level (i.e., followers' goal and norm clarity, as well as their task responsibility; *Chapter 2*) and (2) on a relational level (i.e., followers' perception of leader opportunity and responsibility; *Chapter 3*). Finally, I investigate how (2) the relational level and (1) the task level relate to each other—that is, the idea that perceiving greater leader opportunity in turn inspires better task-related outcomes among followers (e.g., engagement; but also well-being as a downstream consequence of perceived leader responsibility; *Chapter 4*). The three empirical chapters of the current dissertation target these ideas as follows.

The first empirical chapter, *Chapter 2*, investigates how the *frequency* and *digitalization* of leader-follower interaction affect followers' task-related outcomes—that is, followers' *goal clarity, norm clarity*, and *perceived task responsibility*. Study 2.1 follows a cross-sectional approach to gain a first understanding of the relations involved. Subsequently, Study 2.2 comprises a longitudinal approach in order to test the relations between the variables over time. Finally, Studies 2.3 and 2.4 contain a quasi-experimental approach to provide a clearer image regarding the causal direction of the relations found. Furthermore, in order to better understand the processes involved, Studies 2.3 and 2.4 target the proposed mechanism through which frequency of interaction might affect subsequent task-related outcomes. Across studies, results showed that the frequency of leader-follower interaction predicted better task-related leadership outcomes, and that these relations arise due to more opportunities for sharing work-related information. Digitalization, in contrast, was largely unrelated to these outcomes. Accordingly, *Chapter 2* sheds light upon how follower performance can be ensured in time of increasing distance, showing that it is the frequency, rather than the mode of leader-follower interaction that is important for task-related outcomes.

The subsequent empirical chapter, *Chapter 3*, targets the role of *frequency* and *digitalization* of leader-follower interaction for *relational outcomes*. Therefore, two longitudinal studies, Studies 3.1 and 3.2, test whether frequency and digitalization of interaction predict followers' leader perception at a later point in time. More specifically, the two studies investigate whether the two predictors relate to followers' perception of their leader's construal of power. Results of both studies showed that neither frequency nor digitalization of interaction predicted followers' perception of their leader's construal of power. Conversely, the relation between the variables was inverted in that perceived leader opportunity predicted more frequency of interaction. These results suggest that the way leaders and followers interact with each other might be dependent on how followers perceive their leader rather than vice versa.

The last empirical chapter, *Chapter 4*, aims at linking the other empirical chapters by investigating how followers' leader perception (i.e., the *relational outcomes* of *Chapter 3*) relates to subsequent follower *task-related outcomes* (i.e., follower engagement) and follower well-being. Thereby, it considers not only performance-related but also potential health-related outcomes of followers' leader perception. Study 4.1 first followed a cross-sectional approach, in order to provide initial evidence for the hypotheses formulated for this research question. Subsequently, Study 4.2 constituted a test of newly created construal of power scales, as the scales used in Study 4.1 turned out to not assess the concepts adequately. Finally, Study 4.3 applied these newly created scales in a three-wave longitudinal study, in order to observe the relations between the variables over time. Results provided consistent evidence that when followers perceived their leader as construing power as opportunity, followers reported greater engagement. Moreover, results suggested that, in case of follower well-being, perceived leader responsibility might constitute the outcome, rather than the predictor, in that the greater followers' well-being, the more they perceived their leader construing power as responsibility. Taken together, the results of *Chapter 4* contribute to an understanding of how leaders and followers can establish and maintain effective working relationships with each other, thereby ensuring organizational success, while simultaneously being mindful of general follower health. As such, the findings highlight ways for achieving effective leadership and provide novel insights into the role of leaders' construal of power as it is perceived by followers.

Finally, *Chapter 5* constitutes the General Discussion of the empirical evidence presented in *Chapters 2*, *3*, and *4*. In this chapter, strengths and limitations of the current findings are discussed. Furthermore, the findings are summarized and implications for research, as well as future directions are presented. The chapter closes with a discussion of implications for practitioners.

Please note that the empirical chapters of this dissertation are structured in a way that they can be read independently. As the predictions derived in the three chapters build upon similar theoretical assumptions, they may show some content overlap. Additionally, *Chapters 2, 3* and *4* use the term "we" instead of "I" with regard to the authors, as the studies reported within these chapters were conducted in collaboration.

The following chapter contains a manuscript that is the result of a cooperation between Daniel Wroblewski (first author), PD Dr. Annika Scholl (second author), Dr. Lara Ditrich (third author), Dr. Lotte Pummerer (fourth author), and Prof. Dr. Kai Sassenberg (fifth author). A version of this manuscript that is identical in terms of content is published in PLoS ONE. The following table depicts the contributions of the PhD candidate (and of the co-authors, respectively) to the manuscript as well as the current status in the publication process:

<table>
<tr><td>Author</td><td>Author position</td><td>Scientific ideas %</td><td>Data generation %</td><td>Analysis & interpretation %</td><td>Paper writing %</td></tr>
<tr><td>Daniel Wroblewski</td><td>1</td><td>40 %</td><td>70 %</td><td>40 %</td><td>40 %</td></tr>
<tr><td>Annika Scholl</td><td>2</td><td>30 %</td><td>5 %</td><td>20 %</td><td>25 %</td></tr>
<tr><td>Lara Ditrich</td><td>3</td><td>0 %</td><td>0 %</td><td>20 %</td><td>5 %</td></tr>
<tr><td>Lotte Pummerer</td><td>4</td><td>0 %</td><td>20 %</td><td>0 %</td><td>5 %</td></tr>
<tr><td>Kai Sassenberg</td><td>5</td><td>30 %</td><td>5 %</td><td>20 %</td><td>25 %</td></tr>
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Wroblewski, D., Scholl, A., Ditrich, L., Pummerer, L., & Sassenberg, K. (2022). Let’s stay in touch: Frequency (but not mode) of interaction between leaders and followers predicts better leadership outcomes. PLoS ONE, 17(12), Article e0279176. https://doi.org/10.1371/journal.pone.0279176</td></tr>
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Chapter 2: The Relevance of Frequency and Digitalization of Interaction for Outcomes on the Task Level

Across organizations and work settings, leaders’ primary objective is to influence their followers in a way that allows for reaching organizational goals (Bass, 2008; Ellemers et al., 2004; Hollander, 1964). Accordingly, successful leadership requires that leaders make followers aware of the goals, norms, and tasks that the former consider relevant (Bass, 1998; Hogg & Reid, 2006; Locke & Latham, 2002; van Knippenberg & Stam, 2014)—so that followers know of what is expected from them, take responsibility, and engage on behalf of joint organizational success (Hu & Liden, 2011).

Social interactions between leaders and followers are key to reaching this awareness. Notably, the settings in which leaders and followers interact with one another and communicate about the goals or norms have been changing: Economic globalization and digitalization keep transforming work environments, with the result that leaders and followers work more frequently at different locations (Bentley et al., 2016; Gajendran & Joshi, 2012). On top of that, more flexible working hours, home office regulations, and, if nothing else, the COVID-19 pandemic have, on average, increased the (spatial) distance between leaders and followers across fields of work (Antonakis & Atwater, 2002; Bell & Kozlowski, 2002; European Commission, 2020; Rudolph et al., 2021). Since a virtual work setting exacerbates the control over leadership outcomes (Duarte & Snyder, 2006; Hoch & Kozlowski, 2014), factors which ensure that employees know what to do and how to do it, as well as assume responsibility for their tasks in a virtual setting, are vital for organizational success.

The increasing virtuality of leader-follower interactions has two important implications: First, interactions between leaders and followers have become more *digitalized* (i.e., physically distant)*;* they often take place virtually rather than face-to-face (Antonakis & Atwater, 2002; Avolio et al., 2001; Gajendran & Joshi, 2012; Liao, 2017; Shamir, 1999). Second, leaders and followers likely experience opportunities for interaction less frequently; for instance, with leaders and followers working at different locations or at home, there are fewer chances of chit-chat after an official meeting or of incidentally meeting each other in the hallway (Kelley & Kelloway, 2012). Especially the latter aspect, lower *frequency* of interaction, may pose a challenge for leadership success: Due to less frequent contact, followers and leaders see fewer opportunities to share relevant work-related information with each other—which may ultimately make it harder for leaders to make the relevant goals to achieve, the norms to follow, and the task responsibilities to assume clear to their followers.

The present work focused on the role of *frequency* of interaction between followers and their leaders. It tested the hypothesis that more frequent interaction predicts better task-related leadership outcomes among followers (i.e., goal clarity, norm clarity, and task responsibility)—because more frequent contact provides more chances to share work-related information with each other. We also investigated the role of *digitalized* interaction and whether it predicts task-related leadership outcomes (beyond frequency).

Addressing these two facets of 'distance' between leaders and followers, the present work includes four studies on whether the frequency and the digital mode of contact between leaders and followers predict task-related leadership outcomes at a given moment (Study 2.1), over time (Study 2.2), and in a quasi-experimental study inducing different (high vs. low) levels of frequency of interaction (Study 2.3). In a last step, following a causal chain logic (Spencer et al., 2005), we investigated how the assumed mediator—perceived opportunities for work-related information sharing between leader and follower— influences task-related outcomes in another quasi-experimental study (Study 2.4). In sum, the current research contributes to a better understanding of the preconditions for successful leadership in a globalized and digitalized work environment while targeting a concrete leadership context (i.e., having more or less frequent contact with followers as one aspect of leader-follower distance) as a potential means to contribute to better task-related leadership outcomes.

How Frequent Interactions May Contribute to Leadership Success

The frequency of leader-follower interaction reflects the "perceived degree to which leaders interact with their followers" (Antonakis & Atwater, 2002, p. 686). Accordingly, it refers to the *quantity* of contact—how often leaders and followers are in touch with each other. The frequency of interaction constitutes a specific aspect of a leadership setting that is considered theoretically independent of the *mode* of interaction, such as whether the interaction occurs digitally or face-to-face (the latter reflects 'physical distance'; Antonakis & Atwater, 2002); leaders can be physically distant (thus, interact with followers only indirectly via digital modes from a distant location) and yet have (more or less) frequent interactions with followers.

The frequency of interaction has been argued to constitute an important aspect that contributes to leadership outcomes (e.g., in times of increasing distance and digital contact; Antonakis & Atwater, 2002). But what exactly does the frequency of interaction *do*—that is, how does it affect followers? Some prior work targeted its role for *relational* outcomes. On a relational level, frequent interaction likely allows leaders and followers to exchange resources, effort, and emotional support (Ashford & Cummings, 1985), which contributes to high-quality relationships (Davis & Gardner, 2004). As such, more frequent interactions should help followers (and leaders) to establish better relations with each other (Bass, 1990; Napier & Ferris, 1993; Oc & Bashshur, 2013; Shamir, 1995). Indeed, some evidence suggests that more frequent interaction is associated with better leader-follower relationships (e.g., more trust among followers in their leaders; Staples, 2001) and better team mood (Hernández et al., 2020).

Regarding the role of frequency of interaction for *task*-related leadership outcomes, several theoretical approaches suggest that communication has the potential to improve performance through better coordination, clarifying misunderstandings, and the exchange of information (Fletcher & Major, 2006; Marks et al., 2001). Indeed, (curvilinear) relationships between communication *quality* and performance have been found for team interactions

(Marlow et al., 2018), as well as leader-follower interactions (Shockley et al., 2021). However, research regarding the link between *frequency* of leader-follower interaction and outcomes relevant to performance, such as goal clarity, norm clarity, and task responsibility, is scarce. As these factors are crucial for successful leadership (Locke & Latham, 2002; van Knippenberg & Stam, 2014), a better understanding of how they arise is vital, particularly in a time where the number of teleworkers constantly rises.

The present work targets this gap precisely. Indeed, leaders and followers likely need opportunities to exchange work-related information with each other not only to establish a good interpersonal relationship; they likely also need frequent contact for task-related reasons—that is, to clarify *goals*, (i.e., followers' solid understanding of what they are expected to strive for in a work context). Goal clarity contributes to team and organizational performance (Anderson & Stritch, 2016; Raziq et al., 2018). This strongly emphasizes the importance of goal clarity among followers. We propose that more frequent interaction between leaders and followers should provide them with more opportunities to share work-related information with each other (Antonakis & Atwater, 2002), such that leaders (and followers) get the chance to convey their expectations, pose or answer questions, and provide feedback and appreciation (Gajendran & Joshi, 2012)—whereas less frequent interaction likely rather hinders followers from asking such questions and leaders from providing the relevant information and thus from clarifying potentially ambiguous goals. This idea is in line with prior work showing, in reverse, that when their roles and tasks are unclear, followers get in touch with leaders to ask for guidance (Ashford & Cummings, 1985). Accordingly, we propose that more frequent interaction with leaders predicts more goal clarity among followers.

Hypothesis 1: The higher the frequency of interaction of followers with their leader, the higher will be followers' goal clarity.

Leaders do not only guide followers regarding *what* they have to do (i.e., goals), but in many cases also regarding *how* they have to strive to reach the goals at hand—in other words about the norms they are expected to follow (Cialdini & Trost, 1998). Clarity about these norms (sometimes also called process clarity) has, alongside goal clarity (Hu & Liden, 2011), been shown to be a predictor of team performance, as well as of job satisfaction (Sawyer, 1992). In order to achieve norm clarity among followers, the frequency of leader-follower interaction might likewise be a crucial antecedent. Indeed, followers often infer which norms are relevant to the group. They may do so indirectly by observing leaders' behavior (as potential role models; Sassenberg & Hamstra, 2017) or explicitly by receiving information from the leader (Hogg, 2001; Hogg & van Knippenberg, 2003; van Knippenberg & Hogg, 2003)—both of which require at least some level of frequent contact. Accordingly, in addition to goal clarity, a more frequent exchange with the leader on work-related topics likely (explicitly or indirectly) provides followers with information about how things should be done at work, which should contribute to followers' norm clarity. In line with this, related findings show that followers having the chance to observe their leader tend to mimic their leader's behaviors (Henrich & Gil-White, 2001; Liden et al., 2014; Mayer et al., 2009, Ruiz et al., 2011; for an overview, see Sassenberg & Hamstra, 2017). Building upon and going beyond these ideas, we propose that more frequent interaction with leaders predicts more norm clarity among followers.

Hypothesis 2: The higher the frequency of interaction of followers with their leader, the higher will be followers' norm clarity.

Furthermore, through providing greater opportunities for work-related exchange, more frequent interactions with their leaders may give followers more chances to contribute at work (e.g., their own suggestions, opinions, or perspectives); perceiving these opportunities as followers may foster a sense of being more *involved* in task completion, work procedures, and relevant decisions (Gajendran & Joshi, 2012). These aspects ensure that employees are motivated to engage at work (Ellemers et al., 2004; Tyler & Blader, 2003; van Knippenberg & Ellemers, 2003). Indeed, empirical evidence suggests that sensing that they are more involved at work may also help followers recognize that their contributions are valuable and important for the leader, the team, and, ultimately, the organization (Gajendran & Joshi, 2012). In line with this notion, more frequent interaction may provide followers with opportunities to share and contribute work-related information—which should ultimately promote their engagement and, thus, their sense of responsibility for their work (e.g., Scholl et al., 2017). Accordingly, we assume that more frequent contact with their leader will add to a greater sense of *responsibility* among followers to take care of their tasks and to contribute their share to organizational success:

Hypothesis 3: The higher the frequency of interaction of followers with their leader, the higher will be followers' perceived task responsibility.

As elaborated above, we assume that the predicted relations between frequency and these three task-related leadership outcomes (norm clarity, goal clarity, and task responsibility) result from followers' perception of having greater *opportunities to share* work-related information with their leader: More frequent interactions with their leader should give followers the impression that they can ask questions and make contributions; in contrast, less frequent contact may set the perceived 'bar' for getting in touch with the leader and asking questions if something is unclear much higher. Via more opportunities for work-related information sharing, followers likely attain more explicit clarity regarding what is expected from them (norms) and which end states to achieve (goals). Beyond that, sharing work-related information may also give followers a sense of being included in work procedures and that their contributions are important (Gajendran & Joshi, 2012), thus promoting their sense of responsibility for their tasks (task responsibility). These notions are also in line with the communication literature, positing processes like the exchange of information as a means to improve performance (Fletcher & Major, 2006; Marks et al., 2001; Marlow et al., 2018). Taken together, this results in the following mediation hypothesis:

Hypothesis 4: The relations between higher frequency of interaction and the task-related leadership outcomes are mediated by more perceived opportunities for work-related information sharing between leader and follower.

The Role of Digitalized Interaction for Task-Related Leadership Outcomes

With higher spatial distance, leader-follower interactions almost naturally become more digitalized. Digitalization here reflects the relative amount of digital (rather than face-to-face) contact between leaders and followers and has been argued to have different consequences.

On the one hand, some approaches assume that collaborating over (spatial) distance with a lack of face-to-face contact and (often) asynchronous modes of virtual communication—be it via text-, audio-, or video-based communication channels—makes it more *challenging* for leaders to manage collaboration with followers and motivate them towards completing their tasks (Avolio et al., 2000; Bell & Kozlowski, 2002; Hoch & Kozlowski, 2014; Purvanova & Bono, 2009). This might be attributable to the richness of information that is transferred via digital means. According to media-richness theory (Daft & Lengel, 1986; Daft et al., 1987), different modes of interaction (e.g., digital vs. face-to-face) hold a different richness of information, face-to-face being the richest, due to the number of social cues (e.g., facial expressions, gestures) that are transmitted during the interaction. As per media-richness-theory (Daft & Lengel, 1986; Daft et al., 1987), a reduction of this information richness leads to an increase of the equivocality of the information given. In terms of goals, norms, and tasks, this might prove problematic, since a greater equivocality may hinder followers from gaining a clear understanding of the goals and norms they are expected to follow, as well as from assuming responsibility for their tasks. Other approaches, however, argue that when leaders invest extra effort (Purvanova & Bono, 2009), learn how to use virtual modes of communication, or use media to augment leadership (Avolio & Kahai, 2003; Avolio et al., 2000), these challenges may be mitigated. Moreover, over the years, the approach towards media richness has shifted from an objective to a rather subjective view, meaning that the perceived richness of a mode of interaction rather depends, for instance, on attitudes towards, experience with, and knowledge about the medium (for a review, see Ishii et al., 2019). According to this, a medium that may have very poor information richness to one individual, due to lacking experience with the former, might constitute a medium that is very rich on the information transferred for another person (Ishii et al., 2019). As per this notion, given that digital contact nowadays is part and parcel of everyday work in many occupations, leaders and followers gain more and more experience with digital communication; accordingly, the challenges and advantages of digital contact may eventually balance each other out, implying that despite a digital mode of interaction, followers may obtain a clear picture of the goals, norms, and tasks expected of them to follow and assume. This assumption is in line with approaches to computer-mediated communication, showing that interpersonal and task-related outcomes between digital versus face-to-face interaction differ only at the very beginning of an interaction (e.g., in one-shot interaction), but diminish soon over time (Walther et al., 1994). Therefore, we believe that the following hypothesis suggested by early approaches to digitalization deserves to be retested because it might nowadays not be valid anymore.

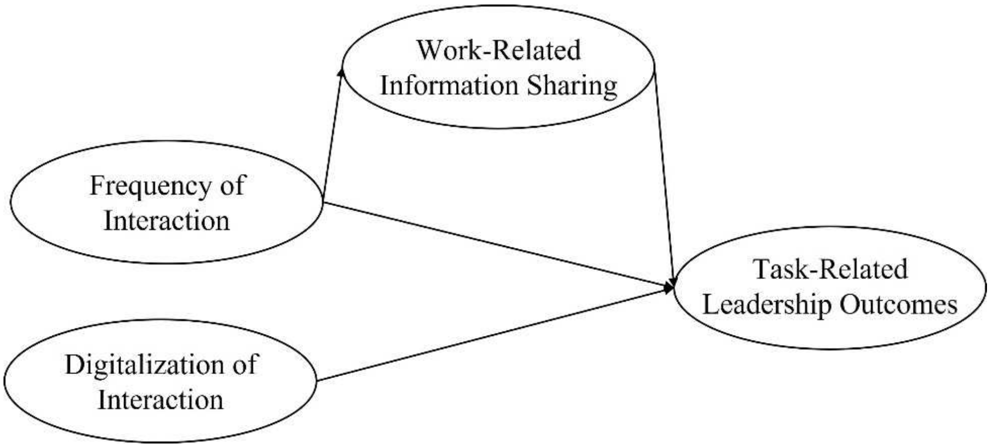
Hypothesis 5: Digitalization of interaction of followers with their leader predicts less goal clarity, norm clarity, and less task responsibility among followers.

The Current Work

The present work tested the role of frequency and digitalization of interaction between leaders and followers for task-related leadership outcomes. The entire proposed model is displayed in Figure 2.1. Specifically, we predicted that the higher the frequency of interaction of followers with their leader, the higher will be (1) followers' goal clarity (Hypothesis 1), (2) followers' norm clarity (Hypothesis 2), and followers' perceived task responsibility (Hypothesis 3). Furthermore, we expected that these relations are mediated by more perceived opportunities for work-related information sharing (Hypothesis 4). Additionally, we predicted that the digitalization of interaction between leaders and followers predicts less follower goal clarity, norm clarity, and perceived task responsibility (Hypothesis 5).

Figure 2.1

Theoretical Model Tested in Chapter 2



Note. Task-related leadership outcomes here are: norm clarity, goal clarity, and perceived task responsibility.

To provide high external validity, we first tested these hypotheses in two studies in the field with two independent samples of followers across organizations. Study 2.1 comprised a cross-sectional design as a first test of the predictions; Study 2.2 complemented this test with a longitudinal design with a time lag of six months between two measurement points. In doing so, Studies 2.1 and 2.2 assessed the frequency and the digitalization of interaction as predictors (Hypotheses 1, 2, 3, & 5). As outcomes across all studies, we assessed followers' goal clarity, norm clarity, and task responsibility.

Going beyond and to allow for greater internal validity, we then ran two quasi-experimental studies that asked employees to recall real past work situations. Specifically, Study 2.3 took a quasi-experimental approach of asking followers to recall a time with a high (vs. low) frequency of contact with their leader (to compare different levels of frequency) before assessing task-related leadership outcomes. Finally, Study 2.4 followed a causal chain logic (Spencer et al., 2005) by comparing high vs. low levels of the presumed mediator (opportunities for work-related information sharing) of Hypotheses 1-3; here, followers recalled a situation in which all their contact with their leader had included high (vs. low) levels of opportunities to exchange work-related information before assessing the three outcomes.

Study 2.1

As an initial test of our predictions, we implemented a cross-sectional design via an online study among followers. We assessed frequency of interaction and digitalization of interaction and tested how they related to our three task-related leadership outcomes (goal clarity, norm clarity, and perceived task responsibility).

Method

Transparency and Openness. Ethical approval for the procedure of the current study was obtained by the Ethics Committee of the Leibniz-Institut für Wissensmedien under 'LEK 2021/141'. Our sampling plan, data exclusions, and all measures are described in the study (see Additional Information for Study 2.1 in Appendix A for a full list of measures and a comprehensive list of items). The data and research materials of Study 2.1 are available at https://doi.org/10.23668/psycharchives.12200, the associated analysis code is available at https://doi.org/10.23668/psycharchives.12201. Data were analyzed using SPSS, version 25, and Mplus 8.5 (Muthén & Muthén, 2020). The study, including its hypotheses and analyses, was preregistered at https://aspredicted.org/5MH_MF3.

Design and Participants. The study was cross-sectional. Participants (personal contacts, i.e., employees across a range of businesses in Germany) were approached personally via email. An a-priori power-analysis (G*Power; Faul et al., 2007) for $1–\beta = .80$, $\alpha = .05$, and $f^2 = 0.05$ (small-to-medium effect) with two variables as predictors in a multiple regression analysis indicated an ideal sample size of $N = 196$. Preregistered inclusion criteria for participants were (1) being at least 18 years old, (2) having current continuous employment to the extent of at least 50% over the past six months, (3) having one or more direct leader(s), (4) answering the survey until the last item (in the exploratory measure interaction valence), and (5) no withdrawal of consent to use their data at the very end of the study (after debriefing).

We recruited 243 respondents to compensate for potential dropouts and exclusions in February and March 2021. Written informed consent was obtained at the beginning of the study. Six participants did not give consent in the beginning, one withdrew their data after the study, 30 did not finish the survey, and six participants did not work at least part-time over the last six months. Accordingly, data from the final sample of $N = 200$ participants (78 female, 122 male, $M_{age} = 40.53$, range = 20-63) were analyzed. Participants worked on average 40.01 hours ($SD = 9.07$) per week. The majority were employed in industry, consumption, and technology (76%); the other occupational fields were health, social services and education (7 %), finance, consulting and insurance (5.5 %), and other industries (11.5 %). At the time of the survey, 75.5 % of the participants had been working for their employers for more than five years.

Procedure. Employees were invited to participate in a 10-minute online survey on the "perception of aspects of work". Participants first indicated whether they fulfilled the criteria for participation; then, we measured the predictors frequency of interaction and digitalization of interaction, both regarding participants' interaction with their leader over the last six months. Next, we measured the task-related leadership outcomes goal clarity, norm clarity, and perceived task responsibility, and two control variables (i.e., perceived appropriateness of frequency of interaction and interaction valence). Finally, participants answered demographic questions (gender, age, working hours, and their area of business).

Measures. Unless indicated otherwise, all items were rated on a seven-point scale ranging from 1 = "strongly disagree" to 7 = "strongly agree".

Predictors. *Frequency of interaction* was measured with four items (e.g., "How frequently did you interact with your leader at work?" (McAllister, 1995); 7-point scale ranging from 1 = "Once or twice in six months" to 7 = "Many times daily").). We assessed *digitalization of interaction* with one item ("What percentage of your weekly working time did you work away from your office (e.g., home-office)?").

Goal Clarity. Four items assessed the dependent variable *goal clarity* (e.g., "In my job, most goals are reasonably clear."). For this scale, the wording of the original items from Burman et al. (2014) was tailored to the current research (e.g., original label: "In all domains, goals are poorly described and/or lack relevance for fellowship training and career development" was turned into "In my job, goals are poorly described.").

Norm Clarity. *Norm clarity* as dependent variable was measured via eight items (e.g., "In my team, we agree about how things should be done."). The scale was self-generated as, to our knowledge, there was no established measure for this concept.

Perceived Task Responsibility. As a third dependent variable, we included five items as indicators of *perceived task responsibility,* adapted from Schaumberg and Flynn (2012). Again, the items' original wording was tailored to the current research (e.g., original label "I feel a great deal of responsibility for the people I work with" was turned into "In general, I feel a great deal of responsibility for the tasks related to my work.").

Results

Cronbach's α, descriptive statistics, and correlations are displayed in Table 2.1. We conducted three separate multiple regression analyses to test our hypotheses that frequency of interaction and digitalization of interaction (added simultaneously as predictors) predict (a) goal clarity, (b) norm clarity, and (c) perceived task responsibility, respectively.

Table 2.1

Means, Standard Deviations, Correlations (Pearson's r), and Cronbach's α (in Brackets on the Diagonal) of Study 2.1 (N = 200), Study 2.3 (N = 178) and Study 2.4 (N = 261)

Study 2.1							
Variables	*M*	*SD*	(1)	(2)	(3)	(4)	(5)
(1) Frequency	4.39	1.17	(.86)				
(2) Digitalization	82.00	26.14	$-.15^{*}$	(-)			
(3) Goal clarity	4.71	1.41	$.25^{***}$	-.01	(.84)		
(4) Norm clarity	4.64	0.87	$.17^{*}$	.03	$.51^{***}$	(.75)	
(5) Responsibility	6.06	0.68	-.02	.05	.11	$.15^{*}$	(.62)
Study 2.3							
Variables	*M*	*SD*	(1)	(2)	(3)	(4)	(5)
(1) Goal clarity	5.04	1.27	(.79)				
(2) Norm clarity	5.32	1.13	$.57^{***}$	(.74)			
(3) Responsibility	5.70	0.87	$.30^{***}$	$.42^{***}$	(.73)		
(4) Digitalization	4.37	1.96	.12	-.05	.02	(.92)	
(5) Info sharing	5.31	1.49	$.58^{***}$	$.55^{***}$	$.39^{***}$	$-.17^{*}$	(.91)
Study 2.4							
Variables	*M*	*SD*	(1)	(2)	(3)	(4)	(5)
(1) Goal clarity	5.04	1.27	(.84)				
(2) Norm clarity	5.32	1.13	$.63^{***}$	(.81)			
(3) Responsibility	5.70	0.87	$.33^{***}$	$.43^{***}$	(.81)		
(4) Frequency	4.37	1.96	$.25^{***}$	$.25^{***}$	$.17^{**}$	(.81)	
(5) Digitalization	5.31	1.49	.03	-.02	-.04	$-.34^{***}$	(.89)

$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Regression models are reported in Table 2.2. Results indicated that a higher *frequency* of interaction predicted more goal clarity (b = 0.30, SE = 0.09, p < .001) and norm clarity (b = 0.13, SE = 0.05, p = .013), but not more perceived task responsibility (b = -0.01, SE = 0.04, p = .805). Accordingly, we found support for H1 and H2, but not for H3. *Digitalization* of interaction neither predicted goal clarity (b = 0.00, SE = 0.00, p = .727), nor norm clarity (b = 0.00, SE = 0.00, p = .457), nor perceived task responsibility (b = 0.00, SE = 0.00, p = .534), thus not supporting H5. In sum, the frequency of interaction (but not digitalization of interaction) between followers and their leaders predicted better leadership outcomes in terms of goal clarity and norm clarity.

Table 2.2

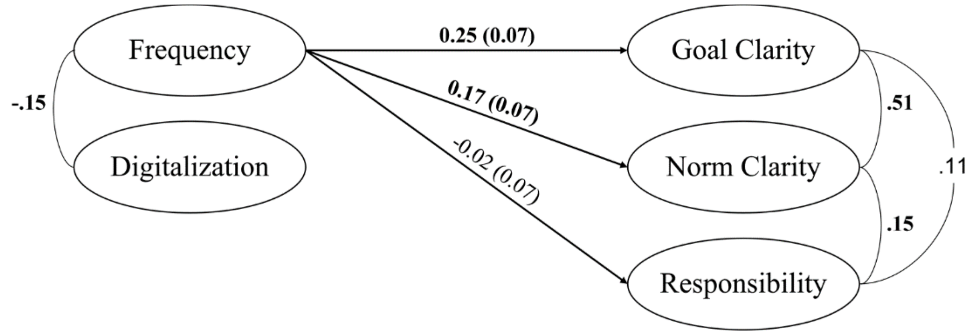
Multiple Regression Analyses of Study 2.1 (N = 200)

	Goal clarity				Norm clarity				Responsibility			
	Model	*b*	*SE*	*p*	Model	*b*	*SE*	*p*	Model	*b*	*SE*	*p*
Frequency		0.30	0.09	< .001		0.13	0.05	.013		-0.01	0.04	.805
Digitalization		0.00	0.00	.727		0.00	0.00	.457		0.00	0.00	.534
R^2	0.06				0.03				0.00			
R^2_{adj}	0.05				0.02				-0.01			
$F(2, 197)$	6.49				3.25				0.25			

To capture all predicted paths in one model, we also applied structural equation modeling (SEM) using Mplus 8.5 (Muthén & Muthén, 2020) to test all hypotheses at once (for structural model, see Figure 2.2). Since we had not found a relation between digitalization of interaction and the task-related leadership outcomes, we set the paths from digitalization to the outcomes equal to zero. The results indicated a good model fit, $\chi^2(3) = 0.83$, $p = .842$, CFI = 1.000, RMSEA = .000, 90% CI [.000;.067], SRMR = .019. Frequency of interaction once again predicted more goal clarity ($b = 0.25$, $SE = 0.07$, $p < .001$) and more norm clarity ($b = 0.17$, $SE = 0.07$, $p = .017$), but not more task responsibility ($b = -0.02$, $SE = 0.07$, $p = .727$, STDXY standardization, from Mplus). As such, results of the SEM once again supported H1 and H2—but not H3. Given that model fit was high and the path from digitalization to the outcomes was fixed to zero, the model can also be seen as indirectly contradicting H5.

Figure 2.2

Structural Model Tested in Study 2.1 Including H1–H4 (N = 200)



Note. Estimates in bold are significant.

Discussion

Study 2.1 yielded first correlational evidence that frequency of interaction is linked to better task-related leadership outcomes in terms of more goal clarity and norm clarity. In contrast, beyond frequency, the digitalization of interaction was not linked to any of the leadership outcomes examined here. Given that both Hernandez et al. (2020) and Shockley et al. (2021) found a curvilinear relation between frequency of interaction and socio-emotional outcomes, we tested for such a pattern. However, we did not find any evidence for it, indicating that the relation between frequency of interaction and the outcomes is in fact linear. Accordingly, our results yield first evidence in line with H1 and H2, but not H3 (perceived task responsibility) or H5.

A potential reason for the lack of support for H3 may be that the mean of perceived task responsibility was rather high, while the variability was very small ($M = 6.06$, $SD = 0.68$), which may have produced a ceiling effect. The lack of support for H5 is in line with the critical discussion of this prediction in our introduction. However, it should be noted that our self-generated one-item measure for digitalization was not optimally suited to test the prediction. Another clear limitation is that the results here rely on cross-sectional data. To address these limitations, Study 2.2 used a longitudinal design and an improved measure of digitalization to test whether the frequency of interaction and the digitalization of interaction are linked to leadership outcomes at a later point in time.

Study 2.2

This study examined whether frequency and digitalization of interaction at one point in time are linked to task-related leadership outcomes six months later.

Method

Transparency and Openness. Ethical approval for the procedure of the current study was obtained by the Ethics Committee of the Leibniz-Institut für Wissensmedien under 'LEK 2021/141'. We again describe our sampling plan, data exclusions, and all measures in the study (see Additional Information for Study 2.2 in Appendix A for a full list of measures and a comprehensive list of items). The data and research materials of Study 2.2 are available at https://doi.org/10.23668/psycharchives.12200, the associated analysis code is available at https://doi.org/10.23668/psycharchives.12201. Data were analyzed using SPSS, Version 25, and Mplus 8.5 (Muthén & Muthén, 2020). This study's design and analyses were not preregistered (for details, see below and see Additional Information for Study 2.2 in Appendix A).

Design and Participants. The study comprised a longitudinal design with two measurement points. Four hundred and twenty-three people were recruited through Prolific Academic at Time 1 (t1; September 2019, in the U.K.) for a two-wave online study on "work perception". Written informed consent was obtained at the beginning of the study. Five of them did not give consent in the beginning, 22 withdrew their data after the study, four had no direct supervisor, and one participant indicated not having worked at all (the latter two refer to preregistered criteria). Accordingly, data from N = 391 participants (233 female, 156 male, 1 other, and 1 missing, M_{age} = 37.96, range = 19-64) were included at t1. Participants at t1 worked on average 35.88 hours (SD = 9.30) per week. The majority were employed in healthcare, social services, and education (33.2%); the other occupational fields were industry, consumption, and technology (26.9%), finance, consulting, and insurance (6.9%), and other industries (33.0%). At the time of the survey, 45.5% of the participants had been working for their employers for less than five years.

For Time 2 (t2, March 2020), we implemented a time lag of six months—we expected that the examined variables need a certain period of time to develop, since goals and norms are relatively stable. Again, we obtained written informed consent at the beginning of the survey. At t2, 344 of the previously recruited participants completed the questionnaire once again; out of these, 37 were excluded due to a job change between t1 and t2. Two additional participants had to be excluded because an error in their Prolific ID led to difficulties in matching the respective datasets of t1 and t2. Thus, data from 305 participants (176 female, 125 male, one other, and three missing, M_{age} = 39.03, range = 19-65) were included at t2. Accordingly, we analyzed combined data from N = 305 participants at t1 and t2 together, which is reported here. At t2, 100% of participants indicated working for the same employer as at t1. Average working hours were indicated with 35.51 hours (SD = 9.47). Most participants were employed in healthcare, social, and education (32.5%); the remainder was employed in industry, consumption, and technology (22.0%), finance, consulting, and insurance (8.9%), and other industries (36.7%). At t2, 39.7% of the participants had been working for their employers for less than five years (M = 2.14, SD = 1.24).

Note that as the study was initially planned for another purpose (for details, see Additional Information for Study 2.2 in Appendix A), the sample size was determined by a power analysis not tailored to the current research question. Therefore, we report a sensitivity analysis rather than an a priori power analysis. The sensitivity analysis (G*power; Faul et al.,

2007) revealed that our actual sample (N = 391) was large enough to detect effects of f^2 = 0.02 with α = .05 and 1-β = .80 (for a single regression weight in a multiple regression with two predictors). Preregistered inclusion criteria (for the study's initial purpose) for participants were once again (1) having a leader (in terms of a direct supervisor), (2) working at least part-time, and (3) not withdrawing their data after the debriefing for the study. Referring to (2), we originally planned only to include participants working at least 18 hours/week. However, as we found that including participants who worked at all did not change the results, we included all participants working more than 0 hours/week.

Measures. Unless indicated otherwise, all items used a seven-point scale ranging from 1 = "strongly disagree" to 7 = "strongly agree". All measures were assessed both at t1 and t2 (to allow for testing the full model, including 'reverse causality').

Predictors. We measured *frequency of interaction* with a four-item scale at t1 and t2 (e.g., "In general, I interact with my leader often."). We here chose items that were clearly unrelated to whether the interaction with the leader was initiated by the leader or the follower (as compared to Study 2.1). We assessed *digitalization of interaction* with a more comprehensive three-item scale (e.g., "My leader and I mostly interact using media (e.g., telephone, email) rather than face-to-face.") instead of using a single item. The third item, which measured the proportion of virtual contact on a scale from 0 to 100%, was converted to a 7-point scale before combining it with the other two items into one scale. This improvement of the measure should lead to a higher chance of finding a possible effect of digitalization of interaction on our outcomes, compared to Study 2.1.

Outcomes. Goal clarity, norm clarity, and perceived task responsibility were measured with the same scales as in Study 2.1.

Results

Descriptive statistics, correlations, and internal consistencies (α) are reported in Table 2.3. Again, we tested our hypotheses via three multiple regression analyses that examined how frequency of interaction and digitalization of interaction, both at t1 (again, entered simultaneously into the regression model), are linked to the three leadership outcomes goal clarity, norm clarity, and perceived task responsibility at t2, while controlling for the respective leadership outcome at t1.

In line with our hypotheses and results from Study 2.1, a higher frequency of interaction at t1 was linked to more goal clarity at t2 (b = 0.15, SE = 0.06, p = .013), more norm clarity at t2 (b = 0.11, SE = 0.04, p = .008), and more perceived task responsibility at t2 (b = 0.12, SE =

0.04, p = .006). Digitalization of interaction at t1, however, neither predicted goal clarity (b = 0.00, SE = 0.05, p = .924), nor norm clarity (b = 0.00, SE = 0.03, p = .951), nor perceived task responsibility (b = 0.04, SE = 0.03, p = .218) at t2, again contradicting H5. All models are reported in Table 2.4.

Table 2.3

Means, Standard Deviations, Correlations (Pearson's r), and Cronbach's α (in brackets) on the Diagonal of Study 2.2 (N = 305)

Variables	*M*	*SD*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Time 1												
(1) Frequency	5.48	1.14	(.79)									
(2) Digitalization	2.72	1.38	-.39***	(.67)								
(3) Norm clarity	5.15	0.83	.29***	-.14**	(.81)							
(4) Goal clarity	4.72	1.36	.29***	-.08	.58***	(.86)						
(5) Responsibility	5.44	1.01	.22***	.02	.35***	.36***	(.81)					
Time 2												
(6) Frequency	5.56	0.96	.71***	-.36***	.30***	.22***	.26***	(.71)				
(7) Digitalization	2.99	1.48	-.31***	.70***	-.14*	-.03	-.02	-.36***	(.70)			
(8) Norm clarity	5.17	0.86	.34***	-.17**	.64***	.41***	.24***	.37***	-.07	(.83)		
(9) Goal clarity	4.86	1.33	.32***	-.10	.50***	.66***	.31***	.24***	-.02	.61***	(.87)	
(10) Responsibility	5.47	0.98	.30***	-.02	.31***	.27***	.69***	.27***	.08	.40***	.36***	(.82)

$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Table 2.4

Multiple Regression Analyses of Study 2.2 Testing How Digitalization and Frequency of Interaction (Both t1) Predict Leadership Outcomes (t2; N = 305)

	Goal clarity					Norm clarity					Task responsibility				
Predictor	R^2adj	*F*	*b*	*SE*	*p*	R^2adj	*F*	*b*	*SE*	*p*	R^2adj	*F*	*b*	*SE*	*p*
Model 1	0.43	234.04			< .001	0.41	212.41			< .001	0.48	281.37			< .001
Outcome (t1)			0.65	0.04	< .001			0.69	0.05	< .001			0.68	0.04	< .001
Model 2	0.44	81.82			< .001	0.42	75.05			< .001	0.49	98.06			< .001
Outcome (t1)			0.61	0.04	< .001			0.64	0.05	< .001			0.65	0.04	< .001
Frequency			0.15	0.06	.013			0.11	0.04	.008			0.12	0.04	.006
Digitalization			0.00	0.05	.924			0.00	0.03	.951			0.04	0.03	.218

Note. For outcome goal clarity t2, 'outcome t1' refers to goal clarity t1; for outcome norm clarity t2, 'outcome t1' refers to norm clarity t1; for outcome task responsibility t2, 'outcome t1' refers to task responsibility t1.

Subsequently, we again implemented a structural equation model using Mplus 8.5 (Muthén & Muthén, 2020) that captured all hypotheses. We estimated the structural model with leader distance at t1 predicting leadership outcomes at t2, while controlling for leadership outcomes at t1. This model also included the reverse direction (leadership outcomes at t1 predicting frequency at t2 while controlling for frequency at t1). We set the correlations between digitalization and the leadership outcomes equal to zero, representing the null effects we anticipated based on the results of Study 2.1. The results of the structural model are presented in Table 2.5.

The findings indicated a good model fit, $\chi^2(10) = 11.36$, $p = .330$, CFI = .998, RMSEA = .021, 90% CI [.000;.066], SRMR = .029. As hypothesized and mirroring findings from the separate regressions, frequency of interaction (t1) was linked to more goal clarity ($b = 0.21$, $SE = 0.05$, $p < .001$), norm clarity ($b = 0.19$, $SE = 0.05$, $p < .001$), and perceived task responsibility ($b = 0.16$, $SE = 0.05$, $p = .002$) all at t2 (STDXY standardization, from Mplus). This supports H1–H3 that the frequency of interaction between leaders and their subordinates at t1 (but not the digitalization of interaction at t1, contrary to H5) links to better leadership outcomes at t2.

Table 2.5

Estimates of the Structural Model in Study 2.2, With b (SE); STDXY Standardization From Mplus (N = 305)

	Time 2			
Variables	**Goal clarity**	**Norm clarity**	**Responsibility**	Frequency
Time 1				
Frequency	0.21 (0.05)***	0.19 (0.05)***	0.16 (0.05)**	0.43 (0.07)***
Digitalization	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-
Goal clarity	0.44 (0.05)***	-	-	-0.09 (0.05)
Norm clarity	-	0.40 (0.05)***	-	0.08 (0.06)
Responsibility	-	-	0.50 (0.05)***	0.10 (0.06)

Note. Hypothesized paths are highlighted in bold.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Discussion

Study 2.2 once again supported our hypotheses that frequency of interaction links to better leadership outcomes in terms of goal clarity, norm clarity, and (in contrast to Study 2.1) perceived task responsibility. This clearly extends the findings from Study 2.1, supporting the predicted relations over time. Notably, the relation with perceived task responsibility (H3) had not been supported in Study 2.1 but was found in Study 2.2. This might be attributable to the lower levels of responsibility reported by participants in Study 2.2 (M = 5.44 for t1, M = 5.47 for t2). Consequently, the discussed ceiling effect may not have been present here, which may have better allowed the predicted relation to manifest. Again, digitalization of interaction did not predict any of the leadership outcomes, replicating the results of Study 2.1. Accordingly, H5 was again not supported.

As indicated earlier, Study 2.2 was originally conducted to test a different set of predictions. In this sense, the reported analyses are exploratory. Notwithstanding, the results do replicate the findings of Study 2.1 (except for H3) and provide support for the predictions preregistered for that study. While the results of Studies 2.1-2.2 provide high external validity in different work contexts, they also relied on correlational data. To overcome this limitation, Study 2.3 used a quasi-experimental design in which we induced different levels of frequency of interaction.

Study 2.3

In this study, we quasi-experimentally induced and compared a high vs. low frequency of interaction between followers and their leader (controlling for digitalization of interaction) and tested the effects on followers' goal clarity, norm clarity, and perceived task responsibility. Given that the results of both Studies 2.1 and 2.2 did not show any effect of digitalization on the outcomes, we did not target it as a predictor in this study. However, we did not want to exclude it entirely, which is why digitalization was assessed as a control variable (i.e., entered in all main analyses for the sake of consistency, following the procedure from Studies 2.1-2.2 which had included both frequency and digitalization as predictors).

Method

Transparency and Openness. Approval for this study was obtained by the Ethics Committee of the Leibniz-Institut für Wissensmedien under 'LEK 2021/141'. The sampling plan, all data exclusions, and all measures are described in the study (see Additional Information for Study 2.3 in Appendix A for a full list of measures and a comprehensive list of items). The data and research materials of Study 2.3 are available at https://doi.org/10.23668/psycharchives.12200, the associated analysis code is available at https://doi.org/10.23668/psycharchives.12201. We analyzed the data using SPSS, version 25, and PROCESS (version 3.5; Hayes, 2018). The study, including its hypotheses and analyses, was preregistered (https://aspredicted.org/eh8vd.pdf).

Design and Participants. As in Study 2.1 and 2.2, this study again investigated whether frequency of interaction predicts task-related leadership outcomes. However, instead of a cross-sectional or longitudinal design, the study featured a quasi-experimental design, implementing two between-participants conditions: by asking participants to remember a time in which they had frequent (vs. infrequent) contact with their leader, we incorporated one condition with high levels of recalled frequency of interaction and one condition with low levels of recalled frequency of interaction. An a-priori power-analysis (G*Power; Faul et al., 2007) for $1\text{-}\beta = .80$, $\alpha = .05$ and $f^2 = 0.03$ (small effect assumed) for two groups in an ANCOVA with one covariate (digitalization of interaction) indicated an ideal sample size of $N = 256$. Preregistered inclusion criteria were (1) having work experience of at least three years, (2) being employed to the extent of at least 50%, (3) following the instructions regarding frequency of interaction with the leader, (4) passing the attention check, and (5) not being a statistical outlier (for details see below).

We recruited $N = 320$ people to compensate for potential dropouts and exclusions in July 2021 through Prolific Academic. Written informed consent was obtained at the beginning of the study. Two people did not give consent in the beginning of the study, 22 did not have work experience of at least three years, and seven were not employed to the extent of at least 50%. Seventeen further people did not consent to their data being analyzed at the end of the study. Twenty-two did not pass the attention check, and, finally, 65 participants did not follow the instructions regarding the frequency of interaction with the leader. Here, after inducing different memory levels of leader-follower frequency of interaction at the beginning of the survey (high vs. low; for details, see below), participants had to indicate at the end of the survey whether they had answered all questions referring to a past time in which the frequency of interaction with their leader had been high or low. In case they did not follow the instruction (i.e., answered the questions referring to the wrong condition), participants did not pass this check and, thus, were excluded from further analysis. Last, in line with the preregistration, we excluded all outliers on each of the three outcomes using studentized deleted residuals (SDR) from a multiple regression of outcomes on the predictor. Participants with an absolute SDR > |2.59| were excluded, following our standard lab protocol. Thereby, seven participants were excluded.

Accordingly, data from a final sample of $N = 178$ participants were analyzed ($N_{low\text{-}frequency} = 78$, $N_{high\text{-}frequency} = 100$, 100 female, 77 male, 1 diverse, $M_{age} = 28.15$, $SD = 6.70$). Participants stated to work 38.76 hours per week on average ($SD = 11.49$). The majority were employed in industry and technology (33.1%); other occupational fields were healthcare, social affairs, and education (19.1%), finances, consulting and, insurances (16.3%), and other sectors (31.5%). At the time of the survey, 62.9% of participants had been working for their current employer for 1-5 years.

Procedure. Employees were invited to participate in a 10-minute online study on the "perception of the collaboration with leaders". First, the criteria for participation were checked (i.e., work experience of at least three years, being employed to the extent of at least 50%, and giving consent). Second, to induce different memory levels of (recalled) *frequency of interaction*, all participants were asked to think and write about two times in the past, (1) one in which they had a high and (2) one in which they had a low frequency of interaction with their leader. Following randomized assignment to condition, they were then asked to answer all following questions of the survey referring to the time when they either had rare (low-frequency condition) or frequent (high-frequency condition) contact with their leader.

Then, the task-related leadership outcomes goal clarity, norm clarity, and perceived task responsibility during said (high- or low-frequency) time were assessed, as well as perceived opportunities for work-related information sharing for exploratory purposes (our mediator then tested in Study 2.4). To ensure the efficacy of our 'manipulation', we then implemented a 'manipulation check' which participants had to pass to continue with the survey. Here, we asked them which situation they should refer the survey's questions to (i.e., a time with high vs. low frequency of interaction). Last, several controls were assessed (i.e., valence of interaction; digitalization of interaction between leader and follower; type of digital contact). Finally, participants answered demographic questions (gender, age, working hours, tenure, and their area of business).

Measures. Unless indicated otherwise, all items implemented a seven-point scale from 1="strongly disagree" to 7="strongly agree".

Control Variable. *Digitalization of interaction* served as a control variable and was measured with three items (e.g., "My leader and I mostly exchanged questions digitally instead of asking each other in person.").

Outcomes. *Goal clarity* was measured with the same four items as in Studies 2.1 and 2.2, however, we slightly changed the items' phrasing to adjust them to the recalled situation (e.g., "Working with this leader during this time, in my job, most goals were reasonably clear."). We assessed *norm clarity* with a scale adapted from the ones used in Studies 2.1 and 2.2 to exclude items which referred to the whole team, due to the focus of this study on the influence of leaders' and followers' dyadic interaction on task-related leadership outcomes. Accordingly, norm clarity was assessed with three items (e.g., “When working on a task with/for my leader during this time, I was always aware of the procedures I was expected to apply.”). Last, we measured perceived *task responsibility* with the same five items as in Studies 2.1 and 2.2, with a slightly changed phrasing (adapted to the manipulation; e.g., “At that specific time, working with/for my leader, I felt a great deal of responsibility for the tasks related to my work.”).

Additional Variables. We assessed our presumed mediator, *perceived opportunities for work-related information sharing*, as an additional exploratory variable using three items (e.g., “During this time, I experienced that my leader and I had the chance to approach each other regarding work-related issues.”).

Results

Descriptive statistics, correlations, and Cronbach’s α are displayed in Table 2.1. Results are shown in Table 2.6. We conducted three ANCOVAs to test our hypotheses on how high vs. low frequency of interaction (following the procedure in Studies 2.1-2.2 including digitalization of interaction, here as control variable) predicts (a) goal clarity, (b) norm clarity, and (c) perceived task responsibility, respectively. Results showed that the two groups differed with respect to their goal clarity, norm clarity, and perceived task responsibility in the expected direction, indicating that the high-frequency group reported more goal clarity, norm clarity, and perceived task responsibility than the low-frequency group (see Table 2.6). Again, these findings are in line with H1-H3, showing that frequency of interaction predicts better task-related leadership outcomes, using a different methodological approach, thereby allowing for greater internal validity than Studies 2.1-2.2. The digitalization of interaction also predicted goal clarity, $F(1, 175) = 15.89$, $p < .001$, $\eta_p^2 = .083$, in that a higher relative amount of digitalization predicted more goal clarity. In contrast, digitalization predicted neither norm clarity, $F(1, 175) = 0.82$, $p = .366$, $\eta_p^2 = .005$, nor perceived task responsibility, $F(1, 175) = 3.76$, $p = .054$, $\eta_p^2 = .021$.

Table 2.6

Results of all three ANCOVAs in Study 2.3 (N = 178)

Measure	Low frequency		High frequency		$F(1, 175)$	η_p^2
	M	*SD*	*M*	*SD*		
Goal Clarity	4.62	1.24	5.38	1.20	31.31	$.152^{***}$
Norm Clarity	4.99	1.13	5.57	1.08	12.75	$.068^{***}$
Responsibility	5.46	0.90	5.89	0.81	15.00	$.079^{***}$

Note. Control variable here was digitalization of interaction. Low frequency = Low frequency of interaction group, High frequency = High frequency of interaction group.
*** $p < .001$.

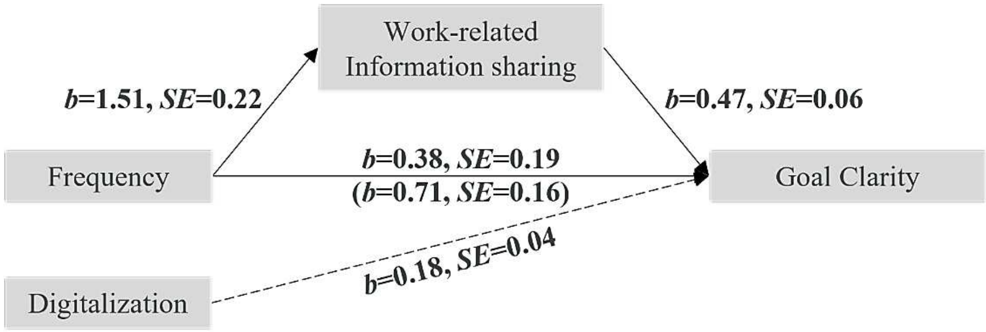
Note that we also conducted three additional ANOVAs to test for group differences regarding the outcomes *without* controlling for digitalization; again, we found significant differences between the high- and low-frequency groups regarding goal clarity, $F(1, 176) = 16.98$, $p < .001$, $\eta_p^2 = .088$, norm clarity, $F(1, 176) = 12.45$, $p = .001$, $\eta_p^2 = .066$, and task responsibility, $F(1, 176) = 11.15$, $p = .001$, $\eta_p^2 = .060$, demonstrating that the relations between frequency and the outcomes stayed significant also without controlling for digitalization.

Additional Analyses. Following the general notion of our theoretical model (see Figure 2.1), we further explored whether the relationships between frequency of interaction and the three outcomes may be mediated by opportunities for work-related information sharing. We conducted mediation analyses (PROCESS, model 4; Hayes, 2018) with frequency as predictor, digitalization as covariate, perceived opportunities for work-related information sharing as mediator, and the three outcomes, respectively.

A total effect of frequency on *goal clarity* was observed, $b = 1.10$, $SE = 0.20$, $p < .001$. After entering the mediator into the model, high (vs. low) frequency predicted more opportunities for work-related information sharing (mediator), $b = 1.51$, $SE = 0.22$, $p < .001$, which in turn predicted greater goal clarity, $b = 0.47$, $SE = 0.06$, $p < .001$. The indirect effect was significant; $b = 0.71$, $SE = 0.16$, 95%-CI [0.435, 1.058] (see Figure 2.3).

Figure 2.3

Mediation Analysis With Outcome Goal Clarity in Study 2.3

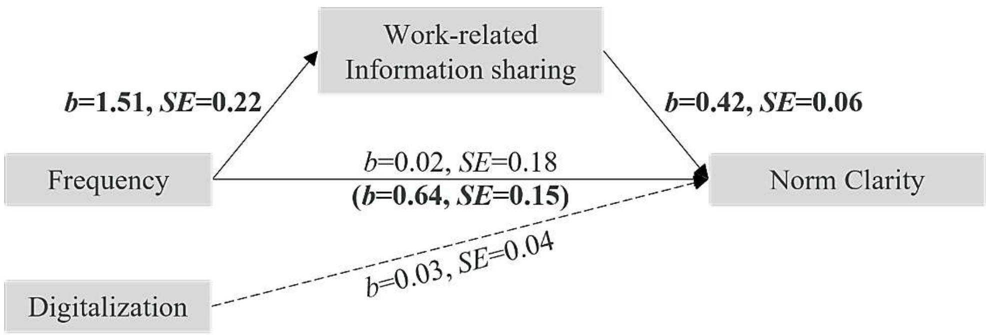


Note. Estimates in bold are significant, dashed line represents control variable.

We also found a total effect of frequency on *norm clarity*, $b = 0.66$, $SE = 0.18$, $p = .001$. High (vs. low) frequency once again predicted more opportunities for work-related information sharing (mediator), $b = 1.51$, $SE = 0.22$, $p < .001$, which was linked to greater norm clarity, $b = 0.42$, $SE = 0.06$, $p < .001$, indirect effect $b = 0.64$, $SE = 0.15$, 95%-CI[0.372, 0.949] (see Figure 2.4).

Figure 2.4

Mediation Analysis With Outcome Norm Clarity in Study 2.3

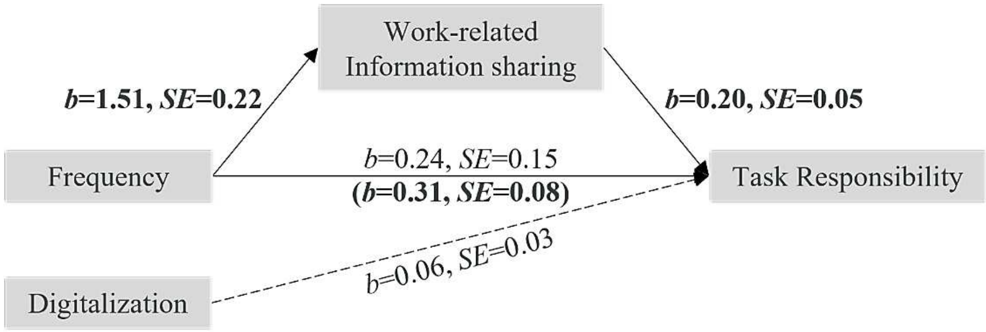


Note. Estimates in bold are significant, dashed line represents control variable.

The total effect of frequency on perceived *task responsibility* was significant, $b = 0.54$, $SE = 0.14$, $p < .001$. High (vs. low) frequency again yielded more opportunities for work-related information sharing, $b = 1.51$, $SE = 0.22$, $p < .001$, which in turn predicted higher task responsibility, $b = 0.20$, $SE = 0.05$, $p < .001$, indirect effect $b = 0.31$, $SE = 0.08$, 95%-CI [0.169, 0.473] (see Figure 2.5).

Figure 2.5

Mediation Analysis With Outcome Perceived Task Responsibility in Study 2.3



Note. Estimates in bold are significant, dashed line represents control variable.

In sum, these exploratory results suggested that all three relations between frequency and the outcomes may be mediated by more perceived opportunities for work-related information sharing, in that a higher frequency predicted more such opportunities, which in turn were linked to a greater respective outcome.

Discussion

Study 2.3 demonstrated that high (vs. low) frequency of interaction (controlling for digitalization of interaction) predicts better leadership outcomes in terms of more follower goal clarity, norm clarity, and perceived task responsibility in the given (recalled) situation. Accordingly, our results support H1, H2, and H3 under more controlled conditions via a quasi-experimental design.

In contrast to Studies 2.1 and 2.2, digitalization correlated with goal clarity (but not with the other two outcomes), which thereby partially supports Hypothesis 5. However, given that this is the only case in which we found this relation and that the bivariate correlation between both variables was not significant (but only the correlation in the ANCOVA controlling for the recalled situation), we consider it as an artifact of the analysis rather than as a valid finding.

Interestingly, our additional analyses yielded exploratory support for the general idea that the relationship between higher frequency and better leadership outcomes may be mediated by more perceived opportunities for work-related information sharing between leader and follower (in line with H4). It should, however, be noted that this hypothesis was not preregistered for this study and that the relation between opportunities for work-related information sharing and the outcomes was only tested correlationally. To overcome the downsides of correlational mediation analyses (Spencer et al., 2005), Study 2.4 followed a causal chain logic—inducing different levels of the *mediator*. We used a quasi-experimental design to induce high (vs. low) levels of perceived opportunities for work-related information sharing (again via recall of specific situations at work) and then assessed the effects on the three main leadership outcomes.

Study 2.4

In Study 2.4, we investigated whether high (vs. low) levels of perceived opportunities for work-related information sharing between leader and follower (our mediator in the overall model) predict better task-related leadership outcomes. Specifically, we hypothesized that high (vs. low) levels of perceived opportunities for work-related information sharing predict higher follower (a) goal clarity, (b) norm clarity, and (c) perceived task responsibility (Hypothesis 4). We induced different levels of (recalled) work-related information sharing with a similar approach as we did with the frequency of interaction in Study 2.3; we once again assessed our three task-related leadership outcomes goal clarity, norm clarity, and perceived task responsibility during said time. We further measured frequency and digitalization of interaction between leader and follower as exploratory variables.

Method

Transparency and Openness. Approval for this study was obtained by the Ethics Committee of the Leibniz-Institut für Wissensmedien under 'LEK 2021/145'. We describe the sampling plan, data exclusions, and all measures in the study (see Additional Information for Study 2.4 in Appendix A for a full list of measures a comprehensive list of items). The data and research materials of Study 2.4 are available at https://doi.org/10.23668/psycharchives.12200, the associated analysis code is available at https://doi.org/10.23668/psycharchives.12201. Data were analyzed using SPSS, version 25. The study, including its hypotheses and analyses, was preregistered (https://aspredicted.org/ea3aq.pdf).

Design and Participants. This study incorporated a quasi-experimental design similar to Study 2.3. Following a causal chain logic (manipulating the mediator of our model; Spencer et al., 2005), however, instead of implementing frequency of interaction as dependent variable, we here investigated whether perceived opportunities of work-related information sharing (the mediator in Study 2.3) predict more follower goal clarity, norm clarity, and perceived task responsibility. The approach was identical to Study 2.3: by asking participants to remember a time when they perceived many (vs. few) opportunities to share work-related information with their leader, we implemented two between-participants conditions (i.e., high work-related information sharing vs. low work-related information sharing). An a-priori power analysis (G*Power; Faul et al., 2007) for $1-\beta = .80$, $\alpha = .05$, and $f^2 = 0.03$ (small effect assumed) with two groups (high vs. low level of opportunities for information sharing) in an ANOVA indicated an ideal sample size of $N = 260$. Preregistered inclusion criteria were (1) work experience of at least three years, (2) being (or having been) employed to the extent of at least 50%, (3) being at least 20 years old, (4) following the instructions regarding opportunities for work-related information sharing (two 'manipulation checks'), (5) passing the 'attention check', and (6) not being a statistical outlier (for details see below).

We recruited $N = 475$ participants via Clickworker. Informed consent was obtained in written form at the beginning of the study. Thirty-one people did not give consent in the beginning, four did not have work experience of at least three years, and four further participants had not been employed to the extent of at least 50%. Forty-five participants did not reach the end of the survey. Of the remaining 391 participants, 114 did not pass the 'manipulation' and/or the 'attention' checks, and seven withdrew their data after debriefing. Last, we once again excluded all outliers on each of the three outcomes using studentized deleted residuals (an absolute SDR > |2.59|) from a multiple regression of the respective outcome on the predictor. Thereby, eight participants were excluded.

We analyzed data from a final sample of $N = 261$ ($N_{low\text{-}info\text{-}sharing} = 137$, $N_{high\text{-}info\text{-}sharing} = 124$, 131 female, 127 male, 2 diverse, 1 not indicated, $M_{age} = 39.21$, $SD = 11.24$). Participants worked on average 39.21 hours per week ($SD = 11.24$). They indicated being employed in industry and technology (26.4%), healthcare, social affairs, and education (26.1%), finances, consulting, and insurances (11.5%), and other sectors (36.0%). At the time of the survey, 49.8% of participants had been working for their current employer for 1-5 years.

Procedure. We invited employees to participate in a 10-minute online study on "the perception of the collaboration with leaders". At the beginning of the study, the inclusion criteria were assessed. If the participants did not meet one of the criteria, they were automatically excluded from further participation. Subsequently, we induced high (vs. low) memory levels of *perceived opportunities for work-related information sharing* via recall. Participants thought about a time when, in all conversations with their leader, they had talked (1) a lot and (2) very little about work-related issues. To recall these situations more vividly, they wrote down a few notes regarding the topics talked about in these conversations for both situations, respectively (in a counterbalanced order, i.e., the low-information-sharing group first wrote about a time with high information sharing, and then low information sharing; vice versa for the high-information-sharing group). Afterwards, they were asked to answer all following questions with reference to the time, depending on which condition they had been randomly assigned to, when they either talked a lot (high-information-sharing) or very little (low-information-sharing) about work-related issues in all their conversations with their leader. We then implemented a *first* 'manipulation check' that participants had to pass to continue survey. Here, we asked them which situation they should refer the survey's questions to. Afterwards, the three task-related leadership outcomes *goal clarity*, *norm clarity*, and *perceived task responsibility* in that specific situation at work were assessed, followed by the two exploratory variables frequency and digitalization of interaction.

Next, participants had to answer a second manipulation check (they were again asked which situation they had referred the survey's questions to, i.e., the high or low information sharing situation). For this *second* 'manipulation check', we added two more answer options ("both" and "I don't know anymore") to reduce the possibility of answering the item correctly by chance.

Subsequently, an 'attention check' followed. In case of a failed manipulation and/or attention check, participants were excluded from further participation immediately. Last, we assessed the demographic variables gender, age, weekly working hours, organizational tenure, own leadership position, and working sector.

Measures. Unless indicated otherwise, all items implemented a seven-point scale from 1 = "strongly disagree" to 7 = "strongly agree".

Outcomes. *Goal clarity, norm clarity*, and *perceived task responsibility* were measured with the same scales as in Study 2.3.

Additional Measures. For exploratory purposes, we also assessed *frequency* and *digitalization of interaction* using the same scales as in Study 2.3.

Results

Descriptive statistics, correlations, and Cronbach's α are displayed in Table 2.1. Results are shown in Table 2.7. To test H4, we first conducted a one-way MANOVA which showed a significant difference between the two groups of high- vs. low-information-sharing on the three outcomes, $F(3, 257) = 14.11$, $p < .001$, partial $\eta^2 = .141$, Wilk's $\Lambda = .859$.

Subsequently, we conducted a separate ANOVA for each of the outcome variables, respectively. We found a significant difference between the two groups for goal clarity, norm clarity, and perceived task responsibility (see Table 2.7). For each outcome, the high-information-sharing group reported higher values on the outcome compared to the low-information-sharing group (and thus, indirectly support the second path captured in H4).

Accordingly, these results support the exploratory mediation findings of Study 2.3 and the general idea that work-related information sharing plays a role in bringing about the beneficial effects on the three leadership outcomes.

Table 2.7

Results of All Three ANOVAs in Study 2.4 (N = 261)

Measure	Low sharing		High sharing		F(1, 259)	η_p^2
	M	*SD*	*M*	*SD*		
Goal Clarity	4.36	1.52	5.36	1.10	36.90	.125***
Norm Clarity	5.05	1.38	5.57	1.01	11.94	.044**
Responsibility	5.43	1.07	5.88	0.83	14.24	.052***

Note. Low sharing = Low work-related information sharing group, High sharing = High work-related information sharing group.

*** $p < .001$.

Discussion

In Study 2.4, following a causal chain logic (Spencer et al., 2005), we compared different levels of opportunities for leader-follower work-related information sharing, our mediator in the overall model (see Figure 2.1). Results showed that high vs. low levels of perceived opportunities for work-related information sharing indeed predicted more follower goal clarity, norm clarity, and perceived task responsibility. Taken together with the results of Study 2.3, these findings, therefore, follow a causal chain logic, showing that the effect of frequency on the task-related outcomes is mediated by work-related information sharing. Accordingly, the findings of Study 2.4 alone indirectly also support Hypothesis 4 and shed light on the mechanism that contributes to bringing about these positive effects on leadership outcomes. While Studies 2.3 and 2.4 follow a causal chain logic, the quasi-experimental procedure employed here does not allow to draw conclusions about causality. Combined with the results of the longitudinal Study 2.2, the current set of studies at least suggest that frequency of interaction affects the three considered outcomes, potentially via work-related information sharing.

General Discussion of Chapter 2

Communicating goals, norms, and task responsibilities as one major aspect of successful leadership has become more challenging between leaders and followers, often with increasing distance between the two. This development gives rise to the question of how leaders can still make the relevant goals, norms, and responsibilities clear to followers. Targeting a concrete leadership context—namely, the *frequency* with which followers interact with their leaders—we investigated a possible means to contribute to good task-related leadership outcomes. Specifically, we tested the hypotheses that the frequency and digitalization of interaction between followers and their leaders would predict better (or worse, respectively) task-related leadership outcomes (i.e., goal clarity, norm clarity, and perceived task responsibility among followers); the former as a result of perceiving more opportunities to share work-related information.

Four studies examined these predictions across organizational contexts and using a variety of methodological approaches. In a first step, we tested our predictions cross-sectionally (Study 2.1) to provide first evidence for our hypotheses. However, this design precluded any conclusions about the direction of the relations found. Study 2.2 then tested the relations over a time lag of six months (Study 2.2). As a next step, we compared different levels of frequency of interaction (high vs. low) in a third study (Study 2.3) to gain quasi-experimental insight into the predicted relations. Study 2.3 also yielded exploratory evidence in line with the general idea that the relations between frequency and better task-related leadership outcomes are mediated by opportunities for work-related information sharing. Building upon these significant (but not preregistered) mediations for all three outcomes, we conducted a follow-up study (Study 2.4), in which we compared different (high vs. low) levels of perceived opportunities for work-related information sharing between leader and follower. Here, we found that high (vs. low) levels of (the mediator) opportunities for work-related information sharing did predict more goal clarity, norm clarity, and task responsibility among followers. In sum, these findings support our argument that frequent interactions between leader and follower yield better task-related leadership outcomes due to greater task-related information sharing opportunities.

Strengths and limitations

Notably, we (successfully) implemented a quasi-experimental approach of 'inducing' different memory levels of frequency of interaction. Participants were instructed to think about a time with their leader in which they had interacted to a different extent or shared work-related information to a different extent, respectively, in Studies 2.3 and 2.4. This approach allows comparing similar people, even though it is not strictly experimental. However, it adds a different method to the cross-sectional and longitudinal survey approach. Given that the results converge across studies, we overall provide strong evidence for our predictions.

As a limitation, all studies relied on followers' self-report regarding task-related leadership outcomes and relied on one data source. Extending these via leaders' perspective or objective measures would be desirable in the future. As a major strength, the studies included followers across organizational fields, supporting our findings' generalizability. Moreover, we targeted frequency of interaction as a rather objective, though self-reported, predictor that more closely captures what leaders *do* (i.e., how often they are in touch with their followers), rather than how followers subjectively perceive their leaders (e.g., how person-oriented leaders may speak to them). A further major strength of the studies lies in the different approaches we took in order to test our predictions (cross-sectional, longitudinal, and quasi-experimental), thereby strengthening the validity of our findings.

Studies 2.1-2.3 supported Hypotheses 1, 2, and 3 (though Study 2.1 did not support H3 for perceived task responsibility). The more frequent the interaction was, the better the task-related leadership outcomes. Contrary to Hypothesis 5, we found no relations between *digitalization* and the leadership outcomes that go beyond those of frequency (except for goal clarity in Study 2.3)—which, overall, supports the idea that the effects of leader-follower interaction on task-related leadership outcomes depend on the *frequency* rather than the mode of interaction.

Regarding the lack of effects of digitalization, however, we cannot rule out the possibility that followers and leaders in our studies were already *accustomed* to communicating digitally with each other. While having more digital contact with their leader may affect outcomes early on when establishing a working relationship between leader and follower, the mode may no longer be as important later. Furthermore, in Studies 2.1 and 2.2, we did not distinguish between different *forms* of digital contact. It is possible that different forms of digital contact may produce different effects, for instance due to the richness of the information transferred between email as compared to video chat (Ishii et al., 2019; Kwak, 2012). For this reason, we added the type of digital medium mainly used when communicating digitally as an exploratory variable in Study 2.3. The type of digital medium neither had a main effect on any outcome, nor did it moderate the relation between digitalization and the outcomes, as we explored in additional analyses. Hence, the type of digital medium does not seem to matter in the relation between digitalization and task-related leadership outcomes.

Theoretical implications

The findings are relevant to leadership research. Prior approaches discussed the role of increasing *distance* between leaders and followers on different levels (Antonakis & Atwater, 2002). Having digitalized contact can reflect an aspect of physical distance (e.g., collaborating digitally from different geographical locations), but it seems to be an aspect that may not be too relevant regarding leadership outcomes (see our results). The frequency of interaction, which was the focus of the present research, has been considered a separate aspect of leader-follower distance (Antonakis & Atwater, 2002). Indeed, the present findings highlight that the latter plays a crucial role in predicting task-related leadership outcomes.

From a theoretical perspective, the question of *how* exactly the frequency of interaction—that is, leaders and followers often being in touch with each other—may shape subsequent outcomes was not directly addressed in prior work. In the present research, we sought to address this gap and suggested that via more frequent contact with their followers, leaders may have more chances to *exchange* task-relevant information with each other (e.g., instructions, background information, or feedback (Katz & Kahn, 1978; Nifadkar et al., 2019); vice versa, doing so may give followers more (perceived) opportunities to contribute their own perspective on task matters or ask questions to their leader. As our results show, both processes likely contribute to greater clarity among followers regarding the goals to pursue, the norms to keep in mind, and the responsibilities to "take care of" as followers. Furthermore, more frequent contact with their followers may enable leaders to better act as role models. Consequently, their followers can infer the relevant goals, norms, and task responsibilities from their leader's behavior (Sassenberg & Hamstra, 2017). In line with our predictions, the present findings indicate that sharing work-related information may indeed be a process by which more frequent interactions contribute to better task-related leadership outcomes.

Besides task-related information, it is also possible that leaders and followers use more frequent contact as an opportunity to share *personal* information with each other—an aspect that may contribute to better relationship building and trust (Larzelere & Huston, 1980; Nifadkar et al., 2019). Future research should aim at targeting the mechanisms involved herein and could also consider taking leaders' perspective into account (e.g., leaders' clarity of followers' task-related progress and needs).

But will more frequent contact always contribute to better outcomes in leadership? One may well assume situations in which either party feels that there is *too frequent* contact; leaders may use the opportunity for frequent meetings to convey all their anger about lack of progress or followers may feel controlled or interrupted by a very high frequency of interaction with their leader. Though this was not the focus of the present work, there are certainly limitations to the benefits of frequent contact; for instance, with increasing task expertise and decreasing insecurity, followers may profit less from frequent contact with their leader. This is in line with path-goal theory (House, 1971; House & Mitchell, 1974), which states that if goals and paths to goals are already clear, further efforts by the leader to clarify paths and goals may be seen as controlling behavior and interpreted negatively. To take these possibilities into account, we included followers' perception of the *appropriateness* (Study 2.1) and *valence* (Studies 2.1 & 2.3) of the interactions with their leaders as potential moderator variables in exploratory analyses. Results suggested that most relations seem to be independent of followers' perceived valence and appropriateness of the interaction (see Additional Information for Study 2.1 and Additional Information for Study 2.3 in Appendix A). Accordingly, in these exploratory analyses, the great majority of relations did not seem to depend on whether followers perceived the interaction as positively (or negatively) valenced or appropriate. This speaks in favor of a relatively robust relation between frequency and leadership outcomes. Still, investigating potential boundary conditions remains an interesting next step for future research.

Practical implications

The findings are also interesting from a *practical* perspective. In times of increasing distance between leaders and followers due to digitalization, more flexible working arrangements, and the COVID-19 pandemic, many insecurities regarding effective leadership may arise. Our work adds to this line of research by showing that the frequency (rather than the mode of interaction) contributes to leadership outcomes for followers—which is good news in terms of flexible work models. Staying in (frequent) touch with followers may be one relatively easy, practical solution for leaders to ensure their followers' clarity of goals, norms, and responsibilities, even when 'traditional' working conditions and contexts keep changing.

To conclude, leaders and followers nowadays communicate more and more over distance. While digitalized (as compared to face-to-face) contact may have its up- and downsides, the present work suggests that for the clear communication of goals, norms, and tasks between followers and their leaders, an important aspect of communication lies in the *frequency* (rather than the mode) of interaction. Accordingly, leaders may still practice effective leadership despite a potentially greater distance between them and their followers if they manage to stay in touch with each other.

The following chapter contains a manuscript that is the result of a cooperation between Daniel Wroblewski (first author), PD Dr. Annika Scholl (second author), and Prof. Dr. Kai Sassenberg (third author). The following table depicts the contributions of the PhD candidate (and of the co-authors, respectively) to the manuscript as well as the current status in the publication process:

Author	Author position	Scientific ideas %	Data generation %	Analysis & interpretation %	Paper writing %
Daniel Wroblewski	1	50 %	80 %	60 %	50 %
Annika Scholl	2	25 %	10 %	20 %	25 %
Kai Sassenberg	3	25 %	10 %	20 %	25 %
Title of paper:		Frequency of Leader-Follower Interaction Does not Predict Perceived Leaders' Construal of Power, but Rather Vice Versa			
Status in publication process:		Revised version submitted for publication			

Chapter 3: The Relevance of Frequency and Digitalization of Interaction for Outcomes on the Relational Level

Imagine a leader and a follower at different locations who are collaborating. By necessity, their interactions will take place digitally and most likely, they will interact less frequently compared to leaders and followers located at the same workplace. How will these two aspects of social interaction—frequency and digitalization—influence followers' perception of their powerholder? Will followers tend to perceive their leader more as someone who sees her power as an opportunity and/or as a responsibility?

Social power is defined as asymmetric control over valued resources (Fiske & Berdahl, 2007); those who possess power can cognitively construe (i.e., perceive) this resource control as an *opportunity* to 'make things happen', because they are in control on the way to goal achievement—for themselves and/or for others (depending on the goal at hand; Scholl et al., 2022). In contrast, those who possess power can also construe power as a *responsibility* to 'take care of things', which is associated with the felt obligation to do what one believes others cannot (due to one's asymmetric control; Sassenberg et al., 2012; Scholl et al., 2017). These two different types of power construal account for the differential effects that power has on those high in power (e.g., their behavior towards those lower in power; Sassenberg et al., 2012; Scholl et al., 2022).

Indeed, most research on power has, thus far, focused on how powerholders construe their power—whereas research on how the *powerless* (e.g., followers) perceive that the powerful construe power is scarce at best (Fousiani & Wisse, 2022; Scholl et al., 2022). Given that followers' perception of their leader has wide-ranging consequences for follower outcomes such as their performance or turnover intentions (Liden et al., 2014; Oc & Bashshur, 2013; Sassenberg & Hamstra, 2017; Yukl & Falbe, 1991), and, thus, ultimately for the organization, investigating factors that predict how followers perceive that their leaders construe their power is highly relevant for organizational success.

As the example above illustrates, one such factor potentially influencing how followers perceive their leader's construal of power is leader-follower interaction. The way in which leaders and followers interact has been rapidly changing at least over the last decade, with more flexible work models arising and more followers working at different locations than their leader (Bentley et al., 2016; Gajendran & Joshi, 2012). Two aspects of social interaction that change due to these new work arrangements are the *frequency* and the *digitalization* (i.e., relative amount of digital vs. face-to-face contact). The present work tested how these two aspects correlate with and predict followers' perception of their leader's power construal. We expected that with greater frequency of interaction, followers would perceive more (1) leader opportunity and (2) leader responsibility—because followers likely need interactions with their leaders to receive an impression about them in the first place. Furthermore, we expected that with greater *digitalization* of interaction, followers would perceive less leader opportunity (but not responsibility)—because more digitalized contact should reduce followers' perception of their leader being socially present, thereby appearing less focused on goal advancement (but not their obligations). These predictions were tested in two longitudinal studies.

In doing so, the current research adds to our knowledge on construal of power from powerless people's point of view, which has been mainly neglected in power research thus far (see Fousiani & Wisse, 2022; Scholl et al., 2022), despite its potential extensive consequences for followers (e.g., perceived relational quality with the leader; Fousiani & Wisse, 2022) and, ultimately, organizations. Hence, it is vital to understand not only how construal of power affects powerholders, but also those dependent on them. Furthermore, in times of flexible work arrangements leading to changing leader-follower interactions (Bentley et al., 2016; Gajendran & Joshi, 2012), our research contributes to knowledge on how these changes might affect the way that leaders and followers perceive and collaborate with each other.

How Frequent Interactions May Contribute to Followers' Leader Perception

The frequency of interaction is defined as the "perceived degree to which leaders interact with their followers" (Antonakis & Atwater, 2002, p. 686). On a theoretical level, it is argued to play an important part in achieving leadership success (Antonakis & Atwater, 2002; Napier & Ferris, 1993). More frequent leader-follower interactions have been predicted to improve follower performance (Antonakis & Atwater, 2002) because they assure sufficient information sharing, opportunities to clarify misunderstandings, and room for coordination (see Fletcher & Major, 2006; Marks et al., 2001). These assumptions have been supported by recent empirical research (Shockley et al., 2021; Wroblewski et al., 2022).

Beyond such task-related outcomes, the frequency of leader-follower interaction might also play a role in relational outcomes (Oc & Bashshur, 2013; Napier & Ferris, 1993; Shamir, 1995). Interpersonal communication provides the basis for and contributes to interpersonal relationships, as it constitutes a process through which individuals can learn about each other (Wood, 1982). Following this argument, more frequent interactions between leaders and followers should contribute to a better social relationship between them. Indeed, research has shown that the frequency of leader-follower interaction predicts more follower trust in the leader (Staples, 2001).

However, before relational outcomes like trust can even be established, people first need to be able to form an impression about the respective other. This impression—the way in which people *perceive* others—might be what enables establishing a relationship in the first place. Accordingly, it is conceivable that the frequency of leader-follower interaction might also be related to followers' perception of their leader, as these interactions are likely the process which render perceiving the respective other possible. In other words: followers require interactions with their leader to form an impression of the latter. This argument is in line with theoretical approaches arguing that communication primarily serves the purpose of reducing uncertainty about the respective other (Berger & Calabrese, 1975; Berger et al., 1976). Accordingly, we argue that frequency of leader-follower interaction contributes to followers' perception of their leader and, more specifically of their leader's construal of power.

How precisely might the frequency of interaction affect followers' perceived leader opportunity? Construing power as opportunity means that powerholders recognize the chance to make things happen on the way to goal attainment that they, as the ones having control, can do. This construal enables them to focus on the goal at hand and focus on moving forward to reach it (for themselves and/or others, depending on the specific goal in focus; Scholl et al., 2022). Accordingly, a construal of power as opportunity has been associated with the tendency to move on (Scholl et al., 2021), without hesitation or considering many alternatives (De Wit et al., 2017). We assume that more frequent contact affects the extent to which followers *perceive* these aspects in their leader (i.e., aspects of construing power as opportunity). More frequent interactions with the leader may suggest to the follower that the leader is keen to advance with a current goal and appreciates feeling in control while 'moving forward'—while rarer contact would rather suggest that the leader is focused on something else or does not care so much about goal attainment. In addition, followers likely receive more nonverbal cues (e.g., gestures and facial expressions) from their leader when they interact more frequently; as a result, followers may perceive the leader as more socially present (Fulk & Boyd, 1991; Sproull & Kiesler, 1991)—which might further contribute to the perception of the leader's focus on goal attainment. As these characteristics constitute aspects of construing power as opportunity (Scholl et al., 2022), we propose that the frequency of leader-follower interaction predicts more follower-perceived leader opportunity.

Hypothesis 1: The higher the frequency of interaction between leader and follower, the higher will be perceived leader opportunity.

At the same time, frequent leader-follower interactions might also contribute to followers perceiving more leader *responsibility*. In contrast to opportunity, this construal rather refers to the *duties* associated with the possession of power, thereby often putting the focus more on other people. Consequently, a construal of power as responsibility (vs. opportunity) has been shown to benefit taking others' advice more into account (De Wit et al., 2017) and to being more willing to share resources fairly (De Cremer & van Dijk, 2008). How might the frequency of interaction affect followers' perception of the leader construing power as responsibility? Frequent interactions have been argued to be a part of and contribute to high quality relationships (Davis & Gardner, 2004) which are, among other things, characterized by emotional support (Davis & Gardner, 2004). Accordingly, we assume that by interacting more frequently with their leader, followers will perceive their leader as more supportive and, thus, as feeling more responsible for and taking care of them. Especially when considering that leaders generally have very little time while having to deal with a multitude of tasks in addition to communicating with their followers, more frequent leader-follower interactions might convey to followers that their leader assumes responsibility for them. Therefore, more frequent interactions might also contribute to followers' perception of their leader's construal of power as *responsibility*. This idea is in line with research arguing that followers may feel abandoned by their leader when frequency of interaction is very low (Hernández et al., 2020; see also Skogstad et al., 2007). Accordingly, we hypothesize:

Hypothesis 2: The higher the frequency of interaction between leader and follower, the higher will be perceived leader responsibility.

How Digitalized Interactions May Contribute to Followers' Leader Perception

Besides frequency, the digitalization of interaction might be related to how followers perceive their leader's construal of power as well. Digital (vs. face-to-face) contact has been argued to transfer a reduced amount of information richness (Daft & Lengel, 1986; Daft et al., 1987), due to the supposed transmission of fewer social cues like facial expressions and gestures, which reduces the perception of social presence (Fulk & Boyd, 1991). Accordingly, the perception of fewer of these cues might hinder followers' perception of their leader's social presence, and might therefore, in line with our argument for Hypothesis 1 (see above), lead to followers perceiving their leader as less present and focused on 'moving forward'. Hence, we hypothesized the following:

Hypothesis 3: The higher the digitalization of interaction between leader and follower, the lower will be perceived leader opportunity.

The reduced amount of information richness that goes along with digitalized (vs. face-to-face) contact (Daft & Lengel, 1986; Daft et al., 1987) might have the same implications for how followers perceive leader's construal of power as responsibility. Indeed, followers might feel that a responsible leader would try for more personal instead of digital contact. Accordingly, with greater digitalization of interaction, followers would perceive their leader as less responsible. However, given the frequent use of digital media for socializing, between friends, and in relationships, this effect might have vanished in recent years. Therefore, we test for the relationship between digitalization of interaction and construal of power as responsibility without deriving a prediction.

The Current Work

The current research tested the role of frequency and digitalization of leader-follower interaction for followers' perception of their leader's construal of power. Specifically, we predicted that with greater frequency of interaction, followers would perceive more (1) leader opportunity and (2) leader responsibility. Additionally, we expected that (3) with greater digitalization of leader-follower interaction, followers would perceive less leader opportunity.

We tested these ideas in two longitudinal studies. Study 3.1 originally served a different purpose and the measures relevant to the current predictions were included for exploratory purposes at t1. For Study 3.2 that was conducted after t1 of Study 3.1, the predictions derived above were preregistered (https://aspredicted.org/3S5_3L3). After the completion of Study 3.2, we collected a second wave for Study 3.1. Given the alternating data collection and the almost identical procedure of both studies, we report the methods and results of both studies together.

All data, analysis code, and research materials are available at https://researchbox.org/1567&PEER_REVIEW_passcode=RFCZOE. After potential acceptance of this manuscript this link will be replaced by a permanent link based on a doi at psycharchives.org. Data were analyzed using SPSS (version 25) and Mplus 8.5 (Muthén & Muthén, 2020).

Studies 3.1 & 3.2

Method

Design and Participants. Ethical approval for the procedure of both studies was obtained by the Ethics Committee of the Leibniz-Institut für Wissensmedien under 'LEK 2021/141'. Informed consent was obtained from all participants included in both studies. For Time 1 (t1) of *Study 3.1*, we recruited 612 people through Prolific Academic in October 2022 (UK-based sample) for a "study on work behavior". Inclusion criteria preregistered for the main purpose of the study (and also for Study 3.2) were (1) having a direct supervisor at work, (2) employment to an extent of at least 21 hours a week, (3) speaking English fluently, and (4) passing the attention check (one item). After excluding participants that did not meet these criteria, data from $N = 597$ people remained in the sample at t1 (307 female, 284 male, 6 diverse, $M_{age} = 36.68$, $SD_{age} = 10.12$ years). On average, participants worked 37.93 hours a week (SD = 6.82).

Time 2 (t2) was conducted in April and May 2023 (approximately six months after t1). Of the 597 people that participated at t1, the 419 who were still available at Prolific were invited. Within two weeks 389 had participated. After excluding participants in line with the inclusion criteria, we analyzed data from 379 participants at t1 and t2 together (196 female, 179 male, 4 diverse, $M_{age} = 39.02$, $SD_{age} = 10.25$ years). Participants' average weekly working hours numbered to 37.93 ($SD = 6.07$).

Participants of both waves differed only regarding their age, $t(503.91) = 6.32$, $p < .001$, from those participating only at t1 (t1 and t2: $M_{age} = 38.54$, $SD_{age} = 10.28$ years; t1 only $M_{age} = 33.45$, $SD_{age} = 8.97$ years), all ts ≤ 1, all ps > .3. We, thus, consider the dropout as non-systematic.

For the preregistered *Study 3.2,* an a-priori power-analysis (G*Power; Faul et al., 2007) for $1-\beta = .80$, $\alpha = .05$, and $f^2 = 0.049$ (effect-size determined based on the regression of responsibility on frequency and digitalization in Study 3.1) with three predictors in a multiple regression analysis indicated an ideal sample size of $N = 216$. We aimed at recruiting $N = 600$ participants to compensate for exclusions and attrition between t1 and t2. At t1, 611 people were recruited through Prolific Academic in late October 2022 (UK-based sample) for a "study on the collaboration with leaders". After exclusions, $N = 599$ people remained in the sample at t1 (318 female, 279 male, 2 diverse, $M_{age} = 36.15$, $SD_{age} = 9.99$ years). On average, participants worked 37.27 hours a week ($SD = 6.96$).

We conducted t2 in February 2023 (approximately twelve weeks after t1). We invited the 537 participants of t1 who were still available on Prolific for the second wave. Of the 398 people who participated, 393 participants were analyzed at t1 and t2 together (198 female, 195 male, $M_{age} = 37.43$, $SD_{age} = 10.29$) after exclusions. Participants indicated working 37.22 hours a week on average ($SD = 6.28$).

Again, participants who took part in t1 and t2 differed from those who did not participate in t2 only in their age, $t(597) = -3.48$, $p = .001$, all other ts ≤ 1.95, all other ps $> .05$ (both waves $M_{age} = 37.16$, $SD_{age} = 10.37$ years; only t1: $M_{age} = 34.20$, $SD_{age} = 8.94$ years). Again, we regard the dropout as non-systematic.

Procedure. Both studies implemented the same procedure. First, participants indicated whether they fulfilled the inclusion criteria. Next, we measured leaders' perceived construal (opportunity and responsibility), followed by the attention check. Subsequently, we assessed the predictors frequency and digitalization of interaction. Finally, participants answered demographic questions (gender, age, working hours, their area of business, organization tenure and time working together with current leader). Furthermore, for t2 of both studies exclusively, we asked participants whether they still reported to the same leader as in the first wave of data collection. Excluding participants who reported a change of their leader between measurement time points did not meaningfully change the results reported below. Therefore, analyses were conducted with all participants. For a list of all measures and the items providing the basis for the analysis below see Additional Information for Study 3.1 and Additional Information for Study 3.2 in Appendix B.

Measures. Unless indicated otherwise, all items were rated on a seven-point scale ranging from 1 = "strongly disagree" to 7 = "strongly agree".

Frequency of Interaction. We assessed frequency of interaction with three items (e.g., "How frequently do you interact with your leader at work?"; McAllister, 1995) on a seven-point scale ranging from 1 = "once or twice in 6 months" to 7 = "many times daily". We omitted one item of McAllister's (1995) original scale that referred to informal interaction.

Digitalization of Interaction. Digitalization of interaction was assessed with three items (e.g., "My leader and I mostly exchange questions digitally instead of asking each other in person.").

Perceived Leader Construal of Power. We measured the construal of power as *opportunity* (as perceived by followers) with seven items (e.g., "My leader cares about being in full control about what he/she does."); construal of power as *responsibility* was also assessed with five items (e.g., "My leader feels responsible for other people's situation."; adapted from Scholl et al., 2017). Both scales were originally developed for leaders and adapted to followers' point of view for the current study.

Descriptive statistics, internal consistencies, and correlations of Study 3.1 and 3.2 are displayed in Table 3.1 and Table 3.2, respectively.

Table 3.1

Descriptive Statistics and Correlations of Variables in Study 3.1 (N = 379)

Variables	*M*	*SD*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Time 1										
(1) Frequency	5.17	1.26	(.95)							
(2) Digitalization	4.44	1.88	-.38***	(.92)						
(3) Opportunity	5.35	0.85	.25***	-.18***	(.76)					
(4) Responsibility	4.93	1.28	.21***	-.03	.19***	(.91)				
Time 2										
(5) Frequency	5.07	1.26	.74***	-.33***	.27***	.13*	(.94)			
(6) Digitalization	4.54	1.83	-.31***	.74***	-.08	.01	-.35***	(.92)		
(7) Opportunity	5.34	0.90	.16**	-.12*	.64***	.16**	.22***	-.09	(.81)	
(8) Responsibility	4.90	1.30	.14**	-.02	.20***	.68***	.16**	-.02	.32***	(.92)

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3.2

Descriptive Statistics and Correlations of Variables in Study 3.2 (N = 393)

Variables	*M*	*SD*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Time 1										
(1) Frequency	5.08	1.29	(.94)							
(2) Digitalization	4.39	1.92	-.36***	(.92)						
(3) Opportunity	5.37	0.84	.22***	-.04	(.78)					
(4) Responsibility	4.99	1.30	.14**	.05	.22***	(.92)				
Time 2										
(5) Frequency	5.07	1.24	.70***	-.36***	.19***	.12*	(.93)			
(6) Digitalization	4.49	1.86	-.39***	.79***	-.02	.02	-.40***	(.93)		
(7) Opportunity	5.36	0.82	.15**	-.05	.52***	.12*	.19***	-.05	(.75)	
(8) Responsibility	5.00	1.32	.10	.05	.13*	.69***	.13*	.05	.18***	(.92)

* $p < .05$. ** $p < .01$. *** $p < .001$.

Results

We predicted that frequency of interaction would predict more leader opportunity and responsibility (Hypotheses 1 & 2) and that digitalization of interaction would predict less leader opportunity (Hypothesis 3). In a first step, we analyzed the data cross-sectionally in all four measurement time points (i.e., in t1 and t2 of Studies 3.1 and 3.2, respectively, see Table 3.3). In line with Hypothesis 1, a higher frequency of interaction predicted more perceived leader opportunity in all four cross-sectional analyses (all *t*s > 3.6, all *p*s < .001). Supporting Hypothesis 2, a higher frequency of interaction predicted more perceived leader responsibility in all four cross-sectional analyses (all *t*s > 3.1, all *p*s < .003). Support for Hypothesis 3 was limited. Digitalization predicted less perceived leader opportunity only at t1 in Study 3.1 (t = -2.51, p = .012; all other *ts* < 1, all other *ps* > .3). Unexpectedly, digitalization of interaction predicted more perceived leader responsibility at both measurement points in Study 3.2 (both *t*s > 2.1, both *p*s < .04) but not in Study 3.1 (both *ts* < 1.4, both *ps* > .18).

Overall, Hypotheses 1 and 2 were clearly supported in the cross-sectional analyses. The higher the frequency of interaction, the more were leaders perceived to construe their power as opportunity and responsibility. The cross-sectional analyses did not support Hypothesis 3 given that only one of four potential correlations was significant. Findings regarding the (unexpected) correlation between digitalization and responsibility are inconsistent—even though both samples were drawn from the same pool with the same inclusion criteria. In Study 3.1, there were no relations, whereas in Study 3.2 more digitalized interaction was found to relate to a perception of leaders' construal of power as responsibility.

Table 3.3

Multiple Regression Analyses t1 and t2 in Studies 3.1 and 3.2

	Opportunity			Responsibility		
Predictor	*b*	*SE*	*p*	*b*	*SE*	*p*
Study 3.1, t1 (*N* = 597)						
Frequency	0.14	0.03	<.001	0.23	0.04	<.001
Digitalization	-0.05	0.02	.012	0.04	0.03	.184
Study 3.1, t2 (*N* = 380)						
Frequency	0.15	0.04	<.001	0.18	0.06	.002
Digitalization	-0.01	0.03	.748	0.03	0.04	.445
Study 3.2, t1 (*N* = 599)						
Frequency	0.15	0.03	<.001	0.18	0.04	<.001
Digitalization	0.02	0.02	.335	0.08	0.03	.008
Study 3.2, t2 (*N* = 394)						
Frequency	0.13	0.04	<.001	0.19	0.06	.001
Digitalization	0.01	0.02	.625	0.09	0.04	.030

Next, we analyzed the data longitudinally (see Table 3.4). Results showed that, contrary to our hypotheses, frequency and digitalization of interaction at t1 did not predict the perception of either construal of power at time t2 (all *t*s < 1, all *p*s > .35). Accordingly, we found no evidence for our predictions in the longitudinal data of either study.

Table 3.4

Cross-lagged Multiple Regression Analyses in Study 3.1 (N = 379) and Study 3.2 (N = 393)

	Opportunity					**Responsibility**				
Predictor	R^2adj	*F*	*b*	*SE*	*p*	R^2adj	*F*	*b*	*SE*	*p*
Study 3.1	.398	84.39			< .001	.459	108.00			< .001
Outcome (t1)			0.69	0.05	< .001			0.71	0.04	< .001
Frequency			0.00	0.03	.892			0.02	0.04	.640
Digitalization			0.01	0.02	.675			0.02	0.03	.438
Study 3.2	.267	48.63			< .001	.476	119.88			< .001
Outcome (t1)			0.51	0.04	< .001			0.71	0.04	< .001
Frequency			0.03	0.03	.376			0.02	0.04	.664
Digitalization			-0.01	0.02	.504			0.02	0.03	.460

Note. For outcome opportunity, 'outcome t1' refers to opportunity t1; for outcome responsibility, 'outcome t1' refers to responsibility t1

Additional Analyses. Since we found no evidence for our predictions in the longitudinal analyses, we explored whether the correlations between variables might originate from the reverse causal direction and perceived construal of power predicts frequency and digitalization of interaction (see Table 3.5). Stronger perceived leader opportunity (t1) indeed predicted frequency of interaction (t2) in Study 3.1 ($t = 2.57$, $p = .010$). In Study 3.2, this relation did not reach conventional level of significance, but pointed in the same direction ($t = 1.59$, $p = .112$). Furthermore, stronger perceived leader opportunity (t1) predicted—significantly but borderline—more digitalization of interaction (t2) in Study 3.1 ($t = 1.99$, $p = .047$). However, in Study 3.2, this effect was not found and descriptively even reversed. All together, these results indicate that – if anything – construal of power predicts interaction (frequency and maybe also digitalization), whereas frequency and digitalization of interaction do not predict perceived construal of power over time.

Table 3.5

Cross-lagged Multiple Regression Analyses (Reverse Causal Direction) in Study 3.1 (N = 379) and Study 3.2 (N = 393)

	Frequency					Digitalization				
Predictor	R^2adj	F	b	SE	p	R^2adj	F	b	SE	p
Study 3.1	.551	155.82			< .001	.553	156.86			< .001
Outcome (t1)			0.71	0.04	< .001			0.75	0.04	< .001
Opportunity			0.14	0.06	.010			0.16	0.08	.047
Responsibility			-0.03	0.04	.428			0.06	0.05	.242
Study 3.2	.486	124.53			< .001	.616	210.97			< .001
Outcome (t1)			0.66	0.04	< .001			0.78	0.03	< .001
Opportunity			0.09	0.06	.112			-0.03	0.07	.671
Responsibility			0.01	0.04	.745			-0.01	0.05	.823

Note. For outcome frequency, 'outcome t1' refers to frequency t1; for outcome digitalization, 'outcome t1' refers to digitalization t1

Given the limited evidence for cross-lagged effects, we aimed to rule out that the correlational relations in the cross-sectional analyses might result from a common method bias. Therefore, we added a common latent factor to the cross-sectional multiple regressions using Mplus 8.5 (Muthén & Muthén, 2020). After controlling for a common latent factor, the relation between, for instance, frequency and opportunity, was in both studies in both waves still significant (all zs > 2.45, all ps < .015). Thus, a mere common method effect is not sufficient to explain the cross-sectional correlations.

General Discussion of Chapter 3

Leaders' construal of power has far-reaching consequences for their decisions and behavior (Scholl et al., 2022). However, research so far neglected the follower perspective on leaders' construal of power (Fousiani & Wisse, 2022; Scholl et al., 2022), despite its potential major implications for followers (see Oc & Bashshur, 2013; Sassenberg & Hamstra, 2017; Yukl & Falbe, 1991). Since interpersonal interaction is likely the way in which people gain an impression about the respective other (Berger & Calabrese, 1975; Berger et al., 1976; Wood, 1982), we examined whether two specific aspects of leader-follower interaction, namely the frequency and digitalization of interaction, would predict followers' perception of their leader's construal of power. Specifically, we preregistered the hypotheses that frequency of interaction predicts more leader opportunity (Hypothesis 1) and more leader responsibility (Hypothesis 2), both as perceived by followers. Furthermore, we expected the digitalization of interaction to predict followers' perception of less leader opportunity (Hypothesis 3).

In cross-sectional testing of our hypotheses, we found frequency of interaction to consistently predict both more leader opportunity and responsibility (supporting Hypotheses 1 and 2). Digitalization predicted the construal of power as opportunity only in one of the four cross-sectional analyses (and none of the longitudinal analyses). On this basis, Hypothesis 3 is to be rejected. Finally, we observed an unexpected relation between digitalization of interaction and perceived leader responsibility in both cross-sectional analyses of Study 3.2. Given that the results regarding this relation are inconsistent across studies, and the effect sizes are small (both Bs < .1; both βs = 0.12), this relation should be interpreted with caution. They might suggest that our measure of digital interaction also captured the frequency of extra interactions (e.g., questions like "Is everything going well?" through messengers) that are seen as a means taking responsibility for employees' needs.

When we analyzed the data longitudinally, we found no evidence for either of our hypotheses. However, perceived leader opportunity predicted more frequency of interaction at a later point in time in Study 3.1 (and descriptively also in Study 3.2). Thus, the causal relationship from frequency of interaction to construal of power we assumed was not supported by the analyses. If anything, the results suggest that the opposite causal direction (from perceived construal of power as opportunity to frequency of interaction) may underlie the cross-sectional evidence found for Hypotheses 1 and 2. These hypotheses, therefore, also need to be rejected.

There are several possible reasons why we did not observe the expected relation in the longitudinal data. First, the relations found in the cross-sectional data of Studies 3.1 and 3.2 might not have a causal relation but might rather arise through *another* variable. Potentially, the effects might be driven by followers' leadership perception. As such, followers' leader perception, in part, seems to be integral, meaning that many (if not all) types of leader behavior share a common ground—in the sense of what followers infer to be associated with 'leadership' by nature (e.g., decisiveness and effectiveness; Schyns & Schilling, 2011). Accordingly, an issue that might manifest when simultaneously measuring frequency of interaction, followers' perception of their leader's construal of power, and other leadership-related concepts is that all those concepts are highly correlated—rendering a meaningful analysis difficult (see also Fischer & Sitkin, 2023; van Knippenberg & Sitkin, 2013). It is, however, unclear why frequency of interaction should also be highly correlated to these leadership concepts. Therefore, a third factor driving the cross-sectional correlations does not seem to be the most likely explanation for the current findings.

A second potential reason why we did not observe the expected longitudinal relation might be that the frequency of interaction plays a role in followers' leader perception only at the very *beginning* of the relationship between leader and follower. It has been argued that different purposes of interpersonal communication prevail at different stages of a relationship (see Wood, 1982). Accordingly, the frequency with which leaders and followers interact with each other might be of particular importance for followers' leader perception when the relationship is not yet established and still rather vague. This importance might fade, however, once followers' perception of their leader's construal of power is solidified. However, in analyses testing the moderation of the predicted effects by the duration of collaboration, we did not find any evidence for the impact of the relationship duration, rendering this explanation unlikely. Third, the bivariate relations could be driven by a common method bias. However, this alternative explanation was ruled out in analyses reported in the results section.

Together with the (not very strong) evidence for the reversed causal direction from perceived construal of power as opportunity to frequency of interaction, the most plausible explanation for our findings is that this causal direction (reversed to what we originally assumed and preregistered) is valid. Followers might perceive goal-focused leaders to seek more contact. Simultaneously, as the measure we used for frequency does not confine itself to leader-initiated contact, it could also be that followers seek more contact with their leader when they perceive them as more goal-focused. Accordingly, the perception of the leader might be what actually influences the leader-follower interactions, not vice-versa.

Regarding the lack of longitudinal effects of digitalization of interaction, it is possible that our theoretical argument regarding the potential negative effects of digitalized contact does not hold true anymore nowadays. We argued that a higher amount of digital contact would lead to the transmission of less rich information (Daft & Lengel, 1986; Daft et al., 1987) and, thus, to a smaller perceived social presence of the respective other, due to fewer social cues transmitted (see Fulk & Boyd, 1991). However, recent approaches argue that the perceived richness of information of a medium depends on an individual's knowledge about a medium, as well as individual preferences (e.g., Ishii et al., 2019). Accordingly, it is possible that followers nowadays and after the substantial increase of remote work during the COVID-19 pandemic are accustomed to collaborating digitally with their leader, which would explain the absence of effects of digitalization in our study.

Strengths and Limitations

The current research shows several strengths, but also limitations. First, we preregistered our predictions for Study 3.2 and report the analyses and results in line with our preregistration despite the falsification of our hypotheses. We, thus, chose a presentation approach in line with open science standards rather than giving story telling priority – as it is still often common in journal publications. Additionally, we tested our predictions by gathering data from participants across different organizational contexts and age groups, thereby avoiding the impact of the norms of a specific organization on our results and ensuring generalizability of the findings.

Regarding limitations, we need to acknowledge that all variables measured in both studies relied on followers' self-report. While it served the purpose of our research to assess leaders' construal of power from followers' point of view, a more objective measure of frequency of interaction might be desirable for future studies on this matter (see Podsakoff & Organ, 1986; on the implications of self-report measures). However, as we explored in additional analyses in Study 3.2, our findings do not seem exclusively be due to a single data source. In addition, the measure has been used successfully in earlier research (McAllister, 1995; Wroblewski et al., 2022).

Implications for Research

Our work contributes to research on construal of power. More specifically, we followed the call to investigate construal of power from the powerless' point of view (see Fousiani & Wisse, 2022; Scholl et al., 2022), as a major part of power research focuses on the power holder (Fousiani & Wisse, 2022; Scholl et al., 2022). By testing the role of the frequency of leader-follower interaction for followers' perception of their leader's construal of power, the current research investigated correlates of perceived leader power construal, albeit we did not find evidence for relations in the expected causal direction. The longitudinal effect we found of perceived leader opportunity in predicting more frequency of interaction, however, indicates that how followers perceive their leader's construal of power might have implications for the way in which they interact with each other. This renders followers' perception of leaders' construal of power a potential *antecedent* of frequency of leader-follower interaction, rather than an outcome. However, more research is needed that targets this question specifically.

Practical Implications

Our research also has practical implications. The lack of relations with digitalization of interaction suggest that people nowadays are experienced with information technology. Our findings seem to comprise a positive message regarding digital leader-follower collaboration. In other work, we already failed to find effects of digitalized contact on task-related leadership outcomes (e.g., followers' task responsibility; Wroblewski et al., 2022). The present findings might hint at the possibility that, today, digitalized contact does not impact relational outcomes related to people perception either, at least in work settings; this speaks in favor of flexible work settings which enable leaders and followers to work at separate locations.

Conclusion

To conclude, we investigated the role of the frequency and digitalization of leader-follower interaction for followers' perception of their leader's construal of power. Frequency but not digitalization of interaction cross-sectionally correlated with perceived leaders' construal of power. Longitudinal analyses suggest that this correlation is rather driven by an effect of construal of power on frequency of interaction than from frequency of interaction to construal of power (falsifying our original prediction). Leaders that are perceived to construe their power as opportunity to "make things happen" are more frequently interacting with followers—be it because these interactions are initiated by leaders or by followers.

The following chapter contains a manuscript that is the result of a cooperation between Daniel Wroblewski (first author), PD Dr. Annika Scholl (second author), Dr. Lara Ditrich (third author), and Prof. Dr. Kai Sassenberg (fourth author). The following table depicts the contributions of the PhD candidate (and of the co-authors, respectively) to the manuscript as well as the current status in the publication process:

Author	Author position	Scientific ideas %	Data generation %	Analysis & interpretation %	Paper writing %
Daniel Wroblewski	1	60 %	80 %	60 %	60 %
Annika Scholl	2	20 %	10 %	15 %	20 %
Lara Ditrich	3	0 %	0 %	10 %	5 %
Kai Sassenberg	4	20 %	10 %	15 %	15 %
Title of paper:		Leaders' Construal of Power as Opportunity Predicts More Follower Engagement			
Status in publication process:		Revised version submitted for publication			

Chapter 4: Linking the Relational and the Task Level

Imagine a leader in an organization making important decisions for the company and their team. Being in this position, the leader formally holds social power (i.e., asymmetric outcome control; Fiske & Berdahl, 2007). Prior work shows that people in such positions can construe (i.e., cognitively appraise) power differently—as an opportunity to freely "make things happen", typically making the leader see all the possibilities that they have while striving for goal attainment, and/or as a responsibility to "take care of things", often making leaders focus not only on goals but also on the situation of those around them (e.g., their followers; Scholl et al., 2022). Does the way how the leader construes their power, then, relate to how motivated and engaged their followers are at work? The present work addressed this question.

The differential effects of construal of power on powerholders' own behavior and cognition are well-studied (e.g., more advice- and less risk-taking under a construal as responsibility vs. opportunity; for an overview, see Scholl et al., 2022). However, research on how those with less power (e.g., followers) perceive powerholders' construal of power, and subsequent outcomes associated therewith, is scarce (Fousiani & Wisse, 2022)—despite potentially yielding extensive consequences for the powerless.

Addressing this research gap, we examined if followers' perceptions of how their leader construes power influences followers' own engagement and well-being at work. We hypothesized that perceiving that their leader construes power as opportunity will motivate followers to follow the leader's example and also focus on the goals at hand—that is, we expected greater follower engagement. Furthermore, we predicted that the more followers perceive that their leader is construing power as responsibility to take care of things (e.g., also of followers' situation), the higher will be followers' own well-being. Three studies tested this idea. Studies 4.1 and 4.2 examined these hypotheses cross-sectionally. Study 4.3 then entailed a three-wave longitudinal design to investigate these relations over time. Doing so, the current research goes beyond prior work on power relations by focusing on the often-overlooked dependent part of the power continuum (i.e., low-power people), rather than the powerholder (see Schaerer et al., 2018). This enhances our knowledge of how followers respond to their perception of their leader's construal of power. As such, the present research contributes to an understanding of how leaders and followers can establish and maintain effective work relationships with each other, thereby ensuring organizational success while simultaneously being mindful of general follower health.

Powerholders' Construal of Power as Opportunity vs. Responsibility

Social power is defined as asymmetric control over resources valued by others (Fiske & Berdahl, 2007). Leaders' power in organizations typically consists of their ability to evaluate followers' performance, apply rewards and punishments, and determine potential salary raises, as these aspects constitute resources that their followers depend on. Note that though power and leadership are clearly distinct, they often go hand in hand in applied contexts (e.g., Magee et al., 2005), which is why we refer to leaders as typical powerholders and to followers as typical lower-power people in the current work.

An extensive body of research addressed the effects of elevated power on powerholders, showing that, for instance, the experience of power benefits approach-oriented behaviors, such as orientation towards action (Galinsky et al., 2003, Maner et al., 2010), decreased suggestibility to environmental cues (Galinsky et al., 2008), and more goal-consistent behavior (Guinote, 2007). However, there are some cases in which the effects of power on the powerholder seem inconsistent. For instance, while some research suggests that the possession of power benefits selfish, self-serving behaviors (e.g., Galinsky et al., 2003; Maner & Mead, 2010), other evidence shows that powerholders (vs. non-powerholders) exhibit more other-oriented, prosocial behaviors (e.g., De Cremer & van Dijk, 2008).

Shifting to the cognitive level provides an explanation for these seemingly contradicting effects of power. Evidently, the way in which powerholders *construe* their power acts as a moderator of the effects power has on people. For instance, the greater focus on goal-relevant information and goal pursuit associated with high power (for summaries, see Galinsky et al., 2015; Guinote, 2017) has been argued to be specific to a construal of power as opportunity (Scholl et al., 2022). A construal of power as responsibility, in contrast, is associated with taking more advice from others (De Wit et al., 2017), being more willing to share resources (De Cremer & van Dijk, 2008), perceiving power as less attractive (Sassenberg et al., 2012), and experiencing more stress (Scholl et al., 2018), compared to a construal as opportunity—in short, with taking other aspects (e.g., others' information or situation) beyond the goal at hand more into account.

How Followers' Perception of Powerholders' Construal May Shape Follower Engagement

However, much less is known about the effects of how those at the low-power part of the power continuum (e.g., followers) perceive powerholders' construal of power (Fousiani & Wisse, 2022; Scholl et al., 2022). As followers' perception of their leader has far-reaching implications for followers' own behavior (Oc & Bashshur, 2013; Sassenberg & Hamstra, 2017; Yukl & Falbe, 1991), it is conceivable that also the way how followers perceive their leader to construe power might yield relevant downstream consequences for follower organizational outcomes.

One outcome of particular interest is follower engagement, as ensuring follower engagement in support of joint organizational success is a crucial goal of effective leadership (Hu & Liden, 2011). Engagement refers to "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli et al., 2002, p. 74). The reason for engagement being vital for effective leadership lies in its association with a myriad of positive outcomes beneficial to organizational success, such as lower turnover intentions, higher exerted effort, and positive attitudes towards the organization (Bakker, 2009; Harter et al., 2002; Hughes & Rog, 2008; Salanova et al., 2005). Given the variety of potential positive outcomes of follower engagement, as well as the link between followers' leader perception and follower behavior (Oc & Bashshur, 2013; Sassenberg & Hamstra, 2017; Yukl & Falbe, 1991), it is all the more surprising that, to our knowledge, there is no research on the direct link between how followers perceive leaders' construal of power and follower engagement.

This raises the question of whether a construal of power as opportunity or responsibility is more beneficial for motivating followers to engage in their job. Recent advances in power research argue especially in favor of the importance of power construed as *responsibility*

(Fousiani & Wisse, 2022; Sassenberg et al., 2012; Scholl et al., 2020; Tost, 2015), arguing that when powerholders neglect their responsibilities and focus only on (often their own) goals and interests, lower follower engagement and satisfaction should be the outcome (Brown et al., 2005; De Hoogh & Den Hartog, 2008).

However, there are good reasons to assume that leaders construing their power as opportunity might also be vital for follower engagement. This construal is associated with communicating a vision and setting clear goals, important precursors of leadership success (van Knippenberg & Sitkin, 2013; Wang et al., 2011), of which follower engagement is one indicator.

Adding to the latter arguments, according to approaches on social influence (Brown et al., 2005; Decuypere & Schaufeli, 2020; Sassenberg & Hamstra, 2017) and social learning theory (Bandura, 1977, 1986), how followers perceive their leader influences followers' behavior. This occurs due to several mechanisms: First, a leader's position in the organization entails authority over their followers. Hence, followers will *infer* which approach of goal pursuit is desired in a team (or organizational) context from their leader perception (Bass et al., 1987; Choi & Mai-Dalton, 1999; Mayer et al., 2009; Miller & Dollard, 1941). Second, in line with social learning theory (Bandura, 1977, 1986), leaders' position in the organization also implies a certain amount of success, rendering them naturally attractive *role models* (Decuypere & Schaufeli, 2020; Sassenberg & Hamstra, 2017). Consequently, followers would behave in accordance with the way in which they perceive their leader to behave, since they assume that doing so will contribute to their own success in the organization. Indeed, empirical evidence confirms this proposition—for positive behaviors (Liden et al., 2014; Mayer et al., 2009; Ruiz et al., 2011; Choi & Mai-Dalton, 1999; Bass et al., 1987), but also negative behaviors (Aryee et al., 2007; Bardes Mawritz et al., 2012; Liu et al., 2012; for an overview, see Sassenberg & Hamstra, 2017).

Building on the approaches elaborated above, we propose that when followers perceive that their leader construes power as an opportunity, the leader's stronger goal focus and readiness to act associated therewith works as a signal for followers that this kind of behavior is desired—and will, thus, imply that followers engage more in their work. Therefore, we hypothesized the following:

Hypothesis 1: The more followers perceive their leader as construing their power as opportunity, the greater will be their engagement.

Leaders' Responsibility and More Follower Well-being

As outlined above, powerholders neglecting responsibility might yield a negative influence on follower engagement because, for instance, they are less likely to foster followers' optimism (see De Hoogh & Den Hartog, 2008), which is a main driver of behavior and feelings at work (Luthans, 2002). In line with this argument, prior work suggests that the perception of the leader assuming responsibility for their followers contributes to followers' motivation and performance (Su et al., 2020; for a review, see van Dierendonck, 2011). Accordingly, one may argue that followers perceiving their leader as construing power as responsibility might engage more at work.

This prior work notwithstanding, research does hint at the fact that responsibility might *primarily* trigger a different outcome. Leaders perceiving their power as responsibility show more communally-oriented tendencies (De Wit et al., 2017; Fousiani & Wisse, 2022), and construing power as responsibility is linked to social identification with the team and attention to followers (Scholl et al., 2017, 2018). Therefore, leaders construing their power as responsibility might pay closer attention to their followers. This might result in followers perceiving more support from their leader. Consistent with this idea, Fousiani & Wisse (2022) showed that followers perceiving their leader as construing power as responsibility reported a higher relationship quality with their leader, which is, among other things, characterized by higher levels of support. Perceived social support, in turn, has been argued to act as a resource to mitigate so-called job demands and to buffer stress (Bakker et al., 2003; Bakker & Demerouti, 2007; Demerouti et al., 2001). Following up on this work, we reason that followers might experience less stress and, thus, greater well-being when they perceive their leader construes power as responsibility. Accordingly, we hypothesized:

Hypothesis 2: The more followers perceive their leader as construing power as responsibility, the greater will be their well-being.

The Current Work

The present work tested the role of how followers perceive their leader's construal of power for follower engagement and well-being. Specifically, we predicted that when followers perceive their leader as construing power as opportunity, followers will engage more at work (H1). Furthermore, we predicted that when followers perceive their leader construing power as responsibility, followers will report greater well-being (H2). We tested the first hypothesis with three independent samples of followers across organizations (Studies 4.1-4.3). Additionally, Hypothesis 2 was tested in Study 4.3. Studies 4.1 and 4.2 comprised cross-sectional designs, Study 4.2 being a pretest of newly developed construal of power scales. Subsequently, we tested our predictions longitudinally in Study 4.3, at three measurement time-points with time-lags of twelve weeks, respectively.

Ethical approval for the procedure of all studies was obtained by the Ethics Committee of the Leibniz-Institut für Wissensmedien under 'LEK 2022/030'. Informed consent was obtained from all participants included in all studies. All data, analysis code, and research materials are available at https://researchbox.org/1765&PEER_REVIEW_passcode=BTQSCU. After potential acceptance of this manuscript, this link will be replaced by a permanent link based on a doi at psycharchives.org. Studies 4.1 and 4.3 were preregistered (for links see the method section of each study). Data were analyzed using SPSS (version 25) and Mplus 8.5 (Muthén & Muthén, 2020).

Study 4.1

Study 4.1 comprised a cross-sectional design, in which we first tested our assumption that leaders' construal of power as opportunity (as perceived by followers) predicts more follower engagement. Initially, however, we predicted that leader responsibility predicts more follower engagement (see preregistration at https://aspredicted.org/PQR_5GW). The hypotheses stated above were preregistered for Study 4.3.

Method

Design and Participants. We recruited 606 employees through Prolific Academic in July 2022 (UK-based sample) for an online study on the "collaboration with leaders". Preregistered inclusion criteria were (1) having a direct supervisor at work, (2) employment to the extent of at least 21 hours/week (i.e., at least half-time), (3) speaking English fluently, and (4) passing the attention check (one item). Two participants did not have a direct supervisor at work, four were not employed to the extent of at least 21 hours/week, and one further participant did not pass the attention check. Finally, one participant retracted their data at the end of the study. Accordingly, data from N = 598 participants were analyzed (291 female, 306 male, 1 diverse, M_{age} = 38.30 years, SD_{age} = 10.49 years). Average working time per week was 37.55 hours (SD = 6.72).

Procedure. Participants first indicated whether they fulfilled the criteria for participation. Then, we measured how they perceived their leader's construal of power as opportunity and responsibility, respectively, which we used as a predictors in our analyses.

Next, we assessed the outcome follower engagement, measured via established scales for (1) effort and (2) organizational citizenship behavior. Finally, participants answered demographic questions (gender, age, working hours, their area of business, organization tenure, and time working together with their current leader).

Measures. Unless indicated otherwise, all items were rated on a seven-point scale from 1 = "strongly disagree" to 7 = "strongly agree".

Leader construal of power. The construal of power as *opportunity* (as perceived by followers) was measured with five items (e.g., "My leader feels that he/she is in control."; adapted from Scholl et al., 2017). Similarly, construal of power as *responsibility* was assessed with five items (e.g., "My leader feels responsible for other people's situation."; adapted from Scholl et al., 2017). Both scales were originally developed for leaders and adapted to followers' point of view for the current study.

Follower Engagement. Ten items measured *effort* (e.g., "I put a lot of energy in the things that I commence."; De Cooman et al., 2009). As a second indicator, we assessed *organizational citizenship behavior* (OCB) with 16 items (e.g., "I do not take extra breaks."; adapted from Smith et al., 1983). We adapted this scale to followers' own point of view.

Descriptive statistics, internal consistencies, and correlations are displayed in Table 4.1.

Table 4.1

Descriptive Statistics, Cronbach's α, *and Correlations of Variables in Study 4.1 (N = 598)*

Variable	*M*	*SD*	(1)	(2)	(3)	(4)
(1) Opportunity	5.33	0.99	(.86)			
(2) Responsibility	5.05	1.20	$.61^{***}$	(.88)		
(3) Effort	5.89	0.91	$.37^{***}$	$.25^{***}$	(.94)	
(4) OCB	5.19	0.71	$.27^{***}$	$.14^{***}$	$.63^{***}$	(.79)

Note. OCB = Organizational citizenship behavior; Cronbach's alpha in brackets on the diagonal

$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Results

We predicted that the more followers perceive their leader to construe power as an opportunity, the higher their effort and OCB would be. To test this hypothesis, we conducted two multiple regression analyses regressing effort and OCB, respectively, on both perceived opportunity and responsibility construals (see Table 4.2). In line with Hypothesis 1, higher perceived leader opportunity predicted more effort and more OCB (both *t*s > 5.7, both *p*s <

.001). In contrast, perceived leader responsibility predicted neither effort nor OCB (both *t*s < 1, both *p*s > .3), indicating that higher leader opportunity, but not responsibility is related to a higher amount of engagement (i.e., effort and OCB) followers report in their job. However, when considering the bivariate correlations, both opportunity and responsibility were related to effort and OCB (see Table 4.2). The (unintended) high correlation between opportunity and responsibility explains the difference between the results of the regression and those of the bivariate correlations.

Table 4.2

Multiple Regression Analyses in Studies 4.1 and 4.2

	Effort			**OCB**			**IWB**		
Predictor	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*
Study 4.1 (*N* = 598)									
Opportunity	0.31	0.05	<.001	0.21	0.04	<.001			
Responsibility	0.03	0.04	.352	-0.02	0.03	.509			
Study 4.2 (*N* = 150)									
Opportunity	0.29	0.09	.001				0.39	0.11	< .001
Responsibility	0.08	0.06	.214				0.08	0.07	.280

Note. OCB = Organizational citizenship behavior, IWB = Innovative work behavior. In Study 4.1, the second indicator for engagement was OCB; in Study 4.2, it was IWB

Additional Analyses. Given the high correlation between opportunity and responsibility, we subsequently conducted an exploratory factor analysis to examine whether we did measure (perceived) opportunity and responsibility construal as two distinct concepts (see Table C1 in Appendix C). Several items of the opportunity scale loaded on both extracted factors. Only two items of the original opportunity scale loaded on only one factor. This means that the two scales did not properly differentiate between the two concepts.

Discussion

In Study 4.1, we found initial support for our hypothesis that perceived leader opportunity by followers predicts more follower engagement (Hypothesis 1), whereas perceived leader responsibility did not—at least when both scales were considered simultaneously. However, both perceived construal of power scales were highly correlated and, in an exploratory factor analysis, many items loaded on both scales. At a theoretical level, both construals of power should be unrelated and earlier research on powerholders' own perception of their construal of power provided evidence for this (see Scholl et al., 2022 for a summary). One potential reason for the high correlations in our study might be that we adapted the original scales by Scholl et al. (2017), which were tailored to powerholders' point of view, to followers' point of view. For this reason, we developed new items intended to measure leader opportunity and responsibility as perceived by followers. In Study 4.2, we tested these scales and once again included measures of engagement. To this end, OCB was preplaced by innovative work behavior (IWB; Janssen, 2000) to consider a wider variety of engagement-related constructs.

Study 4.2

Method

Design and Participants. Given that the main purpose of this study was to pretest the new scales, it was neither preregistered nor was the sample size based on a power analysis. We recruited 150 people through Prolific Academic in October 2022 (UK-based sample) for a cross-sectional online study on the "collaboration with leaders". Inclusion criteria corresponded to Study 4.1. Furthermore, we did not invite participants that took part in Study 4.1. All participants met the inclusion criteria. Accordingly, we analyzed data from $N = 150$ participants (65 female, 85 male, $M_{age} = 39.13$ years, $SD_{age} = 10.78$ years).

Procedure. Participants first indicated whether they fulfilled the criteria for participation; then, we measured the predictors perceived leader opportunity and responsibility via our newly developed scales (for details see below). Next, we measured the outcome engagement, which was again operationalized by two different measures. Subsequently, we implemented the attention check. Finally, participants again answered demographic questions (gender, age, working hours, their area of business, organization tenure, and time working together with their current leader).

Measures. Unless indicated otherwise, all items were rated on a seven-point scale from 1 = "strongly disagree" to 7 = "strongly agree".

Leader construal of power. We measured construal of power as *opportunity* (as perceived by followers) with seven items (e.g., "My leader cares about being in full control about what he/she does."). Construal of power as *responsibility* (as perceived by followers) was assessed with six items (e.g., "My leader feels responsible for other people's situation."). We developed the new construal of power scales by selecting those items which loaded exclusively on one factor in Study 4.1 and created additional items targeting leader characteristics that are well assessable (i.e., observable) by followers. The responsibility scale, thus, focuses on leader behavior relevant to their relationship to the followers and the followers' needs, whereas the opportunity items center around the achievement of leaders' goals and their control. After conducting an exploratory factor analysis, we excluded items which did not show good factor loadings for the intended respective scale, resulting in five items each for both scales. For the results of the exploratory factor analysis, see Table 4.3; for Descriptives and reliabilities, see Table 4.4.

Subsequently, we also conducted a confirmatory factor analysis (CFA) via Mplus 8.5 (Muthén & Muthén, 2020) for both the assumed two-factor structure and a one-factor structure. The two-factor structure that we expected yielded a better fit, $CFI = 0.933$, $RMSEA = 0.094$, 90%-CI $RMSEA$ [0.067, 0.121], $SRMR = 0.063$, compared to the one-factor structure, $CFI = 0.620$, $RMSEA = 0.222$, 90%-CI $RMSEA$ [0.199, 0.246], $SRMR = 0.178$. Thus, we continued analyses with the two newly created perceived construal of power scales.

Follower Engagement. Ten items measured effort (e.g., "I put a lot of energy in the things that I commence."; De Cooman et al., 2009). As a second indicator, we here assessed *innovative work behavior* (IWB) with nine items (e.g., "I create new ideas for difficult issues."; Janssen, 2000) on a 7-point scale from 1 = "never" to 7 = "always".

Table 4.3

Results From Exploratory Factor Analysis of the Opportunity and Responsibility Scales in Study 4.2 (N = 150)

Item		Factor 1	Factor 2
1	My leader thinks about how his/her actions impact others	**0.87**	
2	My leader feels a great deal of responsibility for the people he/she works with	**0.87**	
3	My leader feels the duty to make sure that nobody is stressed at work.	**0.83**	
4	My leader feels that he/she needs to take care of other people's needs	**0.82**	
5	My leader feels responsible for other people's situation	**0.71**	
6	My leader feels the duty to make sure that nobody self-exploits on the job	0.57	0.39
7	My leader enjoys when his subordinates follow his/her guidance		**0.80**
8	My leader cares about being in full control about what he/she does		**0.80**
9	My leader feels that he/she can follow his/her own ideas		**0.76**
10	My leader feels that he/she is in control		**0.73**
11	My leader feels that he is the author of his actions	0.42	0.62
12	My leader values when my colleagues and I act in line with his intentions	0.34	0.58
13	The things my leader does are directed by his/her free will.		**0.56**

Note. The extraction method was principal axis factoring with an orthogonal (varimax) rotation and Kaiser normalization. Factor loadings <.3 are not displayed. Items 1 to 6 were formulated for the responsibility scale, items 7 to 13 were formulated for the opportunity scale. Factor loadings for items loading on one factor only are highlighted in bold.

Table 4.4

Descriptive Statistics, Cronbach's Alpha, and Correlations of Variables in Study 4.2 (N = 150)

Variable	*M*	*SD*	(1)	(2)	(3)	(4)
(1) Opportunity	5.44	0.81	(.81)			
(2) Responsibility	5.03	1.19	$.19^{*}$	(.89)		
(3) Effort	5.96	0.89	$.28^{**}$	.15	(.95)	
(4) IWB	4.94	1.09	$.30^{***}$	.14	$.28^{**}$	(.94)

Note. IWB = Innovative work behavior. Cronbach's alpha in brackets on the diagonal.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Results

We again predicted that perceived leaders' construal of power as opportunity would predict engagement (effort and IWB). As in Study 4.1, we conducted multiple regression analyses regressing effort and IWB, respectively, on both perceived leader opportunity and responsibility—this time with the newly developed final power construal scales (see Table 4.2). As hypothesized, we found that perceived opportunity predicted more effort and more IWB (both ts > 3.2, both ps < .002). In contrast, perceived responsibility predicted neither effort nor IWB (both ts < 1.3, both ps > .21). Note that these results did not differ when including all newly created items in the two power construal scales (i.e., also the omitted items for opportunity and responsibility; see Additional Information for Study 4.2 in Appendix C). Moreover, compared to Study 4.1, the results of the regressions were also mirrored by the bivariate correlations here. Consistent with Study 4.1, these results suggest that a perceived construal of power as opportunity, rather than responsibility, is an important correlate of follower engagement.

Discussion

In Study 4.2, we replicated the findings of Study 4.1. Followers' perception of their leader's construal of power as opportunity but not responsibility predicted follower engagement in terms of effort and IWB. This pattern of results was observed using a newly developed scale for perceived leaders' construal of power, in which both construals correlated much less than in case of the scales used in Study 4.1 (see Table 4.4).

A limitation of both studies is their cross-sectional design. To gain a clearer indication of whether perceived construal of power indeed predicts engagement over time, Study 4.3 used a longitudinal design. In addition, to test Hypothesis 2, we assessed well-being in this study.

Study 4.3

Method

Design and Participants. This longitudinal study was preregistered at https://aspredicted.org/ZMW_18T. We employed the inclusion criteria applied in Studies 4.1 and 4.2 at all three measurement time points. Furthermore, the study was not displayed for participants of Study 4.1 and 4.2.

Time 1. At Time 1 (t1), 612 people were recruited through Prolific Academic in October 2022 (UK-based sample) for a "longitudinal study on the collaboration with leaders". Five participants did not have a direct supervisor, six did not work at least 21 hours a week, and four further participants did not pass the attention check. Accordingly, data from N = 597 people remained in the sample at t1 (307 female, 284 male, 6 diverse, M_{age} = 36.68 years, SD_{age} = 10.12 years). On average, participants worked 37.93 hours a week (SD = 6.82).

Time 2. We conducted Time 2 (t2) in January 2023—twelve weeks after t1—as we expected the variables we examined not to be too stable. Of the 597 participants at t1, 538 were still available on Prolific at t2 and were invited for the second wave. We let the study run for one week, at the end of which 465 respondents had participated. Two participants did not meet our inclusion criterion for having a direct supervisor at work anymore, one did not work at least 21 hours a week anymore, one person indicated not to be fluent in English, and two further participants did not pass the first attention check. Lastly, we had to exclude three participants that erroneously participated at t2 despite having failed the attention check at t1.

Accordingly, we analyzed data from 456 participants at t1 and t2 together (234 female, 217 male, 5 diverse, M_{age} = 37.92 years, SD_{age} = 9.91 years). On average, they indicated working 37.83 hours a week (SD = 6.35). The value of one participant regarding weekly working hours had to be deleted due to implausibility. At t2, participants of both waves differed from those participating only at t1 regarding their age, $t(595) = -4.39$, $p < .001$ (t1 and t2: M = 37.67, SD = 9.91 years; t1 only M = 33.45, SD = 10.15 years), regarding IWB, $t(306.64) = 3.66$, $p < .001$ (t1 and t2: M = 4.93, SD = 1.08; t1 only M = 5.25, SD = 0.81), and regarding well-being, $t(595) = -2.55$, $p = .011$ (t1 and t2: M = 3.21, SD = 0.65; t1 only M = 3.05, SD = 0.65).

Time 3. Beyond our original preregistration, we furthermore collected data for a third wave, as we found only partial evidence for our predictions at t2 and wanted to investigate whether a longer time interval between t1 and t3 would yield the expected relations. Our predictions for this third wave were preregistered at https://aspredicted.org/T1K_SYG. We conducted Time 3 (t3) in April and May 2023—approximately twelve weeks after t2. We invited all those participants of t1 that were still available at Prolific at that time (N = 419). After two weeks of data collection, 389 had participated.

After excluding those who did no longer meet the inclusion criteria, 379 participants remained in the sample at t3 (196 female, 179 male, 4 diverse, M_{age} = 39.02, SD_{age} = 10.25 years). Average weekly working hours amounted to 37.93 hours (SD = 6.07). At t3, participants of all three waves differed from those participating at t1 regarding their age, $t(503.91) = -6.32$, $p < .001$ (t1 and t2: M = 38.54, SD = 10.28; t1 only M = 33.45, SD = 8.97) and regarding well-being, $t(595) = -2.44$, $p = .015$ (t1 and t2: M = 3.22, SD = 0.65; t1 only M = 3.09, SD = 0.65). As the differences we found between participants of t1 only and participants of t2 (or t3, respectively) were significant, but very small, we regard the dropout as non-systematic.

Procedure. We implemented the same study procedure for all three measurement time points. First, participants indicated whether they fulfilled the inclusion criteria. Next, we measured the predictors perceived leader opportunity and responsibility, followed by the outcomes follower engagement and well-being. Subsequently, we implemented the attention check. Finally, participants again answered demographic questions (gender, age, working hours, their area of business, organization tenure and time working together with their current leader). Furthermore, for t2 and t3 exclusively, we asked participants whether they reported to the same leader as in the first wave of data collection.

Measures. Unless indicated otherwise, all items were rated on a seven-point scale ranging from 1 = "strongly disagree" to 7 = "strongly agree". Measures at t1, t2, and t3 were identical.

Measures of perceived leader opportunity, perceived leader responsibility, and follower engagement were identical to those in Study 4.2. In addition, we assessed follower *well-bein*g with ten items (HSCL-10; Tambs, 2004, e.g., "Feeling tense or keyed up"). To obtain higher values for higher feelings of well-being, participants' scores on the HSCL-10 were reverse-coded prior to data analysis.

Descriptive statistics, correlations, and internal consistencies (α) are reported in Table 4.5.

Results

First, we tested our hypotheses cross-sectionally in all three measurement time points (see Table 4.6). In line with Hypothesis 1, perceived leader opportunity predicted both more follower effort and IWB at t1, t2, and t3 (all ts > 5.8, all ps < .001). Perceived leader responsibility, too, predicted more follower effort and engagement at all three measurement time points (all ts > 2.9, all ps < .004). Furthermore, responsibility predicted more follower well-being at all three measurement time points (all ts > 2.2, all ps < .03), supporting Hypothesis 2. In contrast, perceived opportunity construal was unrelated to well-being (all ts < 1.6, all ps > .110). Accordingly, Hypotheses 1 and 2 were supported in the cross-sectional analyses. We also found a significant relation between responsibility and more follower effort and IWB; opportunity, however, explained the major part of variance in both regressions (see Table 4.6). Therefore, in line with Hypothesis 1, opportunity seemed to be the main predictor of engagement in these analyses.

Table 4.5

Means, Standard Deviations, Correlations (Pearson's r), and Cronbach's α (in brackets on the diagonal) of Study 4.3 (N = 379)

Variables		*M*	*SD*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Time 1																		
(1)	Opportunity	5.35	0.85	(.76)														
(2)	Responsibility	4.93	1.28	.19***	(.91)													
(3)	Effort	5.94	0.84	.42***	.23***	(.94)												
(4)	IWB	5.01	1.03	.34***	.22***	.39***	(.93)											
(5)	Well-being	3.18	0.65	.03	.17***	.21***	.08	(.91)										
Time 2																		
(6)	Opportunity	5.43	0.83	.58***	.05	.30***	.29***	.06	(.77)									
(7)	Responsibility	4.95	1.26	.15**	.68***	.16***	.21***	.13**	.21***	(.91)								
(8)	Effort	5.90	0.94	.37***	.13**	.77***	.35***	.28***	.35***	.22***	(.94)							
(9)	IWB	4.90	1.15	.29***	.21***	.36***	.75***	.17***	.30***	.25***	.48***	(.95)						
(10)	Well-being	3.21	0.66	.08	.09	.22***	.14**	.76***	.09*	.12**	.36***	.20***	(.92)					
Time 3																		
(11)	Opportunity	5.34	0.90	.64***	.16**	.28***	.27***	.10*	.67***	.24***	.34***	.26***	.16**	(.81)				
(12)	Responsibility	4.90	1.30	.20***	.68***	.18***	.25***	.23***	.13*	.75***	.19***	.28***	.17**	.32***	(.92)			
(13)	Effort	5.88	0.93	.37***	.20***	.80***	.36***	.28***	.32***	.12*	.83***	.41***	.34***	.36***	.25***	(.95)		
(14)	IWB	4.80	1.18	.30***	.16**	.33***	.72***	.17**	.28***	.19***	.35***	.79***	.22***	.35***	.26***	.41***	(.95)	
(15)	Well-being	3.27	0.65	.07	.16**	.23***	.09	.76***	.14**	.19***	.34***	.19**	.79***	.14**	.20***	.28***	.18***	(.92)

$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Table 4.6

Cross-Sectional Multiple Regression Analyses t1, t2, and t3 in Study 4.3

	Effort			IWB			Well-being		
Predictor	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*
t1 (*N* = 597)									
Opportunity	0.38	0.04	< .001	0.38	0.05	< .001	0.00	0.03	.925
Responsibility	0.10	0.02	< .001	0.13	0.03	< .001	0.09	0.02	< .001
t2 (*N* = 456)									
Opportunity	0.35	0.05	< .001	0.36	0.06	< .001	0.06	0.04	.131
Responsibility	0.12	0.03	< .001	0.18	0.04	< .001	0.06	0.03	.025
t3 (*N* = 379)									
Opportunity	0.32	0.05	< .001	0.38	0.07	< .001	0.06	0.04	.113
Responsibility	0.11	0.04	.003	0.15	0.05	.001	0.08	0.03	.002

As a next step, we analyzed our data longitudinally from t1 to t2 (see Table 4.7). Prior to analysis, we excluded participants at t2 that indicated not to report to the same leader anymore as at t1—as a change of the leader after t1 renders the predictor at t1 irrelevant for the later measurement of the outcome. This resulted in 430 participants at t2. Subsequently, we conducted multiple regression analyses while excluding outliers in each regression (i.e., participants with an absolute studentized residual > |2.59| on each respective outcome). Opportunity at t1 predicted more effort at t2 (t = 2.97, p = .003), but not more IWB at t2 (t = 0.47, p = .638). Accordingly, our findings were only partly in line with Hypothesis 1, which states that perceived leader opportunity would predict more follower engagement. Responsibility at t1 was unrelated to both follower effort at t2 and IWB at t2 (both *t*s < |1.2|, both *p*s > .23). Furthermore, we found no evidence for our second hypothesis that responsibility at t1 predicts more follower well-being at t2 (t = -0.12, p = .902). Opportunity at t1 did not predict follower well-being at t2 either (t = 0.82, p = .411). For results of analyses including participants whose leader changed between t1 and t2 as well as outliers, see Table C2 in Appendix C.

Table 4.7

Multiple Regression Analyses of Study 4.3 With Restricted Sample, Testing How Perceived Leader Opportunity and Responsibility (Both t1) Predict Follower Outcomes (t2; N = 430)

	Outcome t2														
	Effort					IWB					Well-being				
Predictor	R^2adj	F	b	SE	p	R^2adj	F	b	SE	p	R^2adj	F	b	SE	p
Model	.670	286.75			< .001	.616	228.20			< .001	.694	314.51			< .001
Outcome (t1)			0.79	0.03	< .001			0.80	0.03	< .001			0.88	0.03	< .001
Opportunity			0.09	0.03	.003			0.02	0.04	.638			0.02	0.02	.411
Responsibility			-0.02	0.02	.236			0.02	0.03	.391			0.00	0.01	.902

Note. For outcome effort t2, ‘outcome t1’ refers to effort t1; for outcome IWB t2, ‘outcome t1’ refers to IWB t1; for outcome well-being t2, ‘outcome t1’ refers to well-being t1.

As the outcomes that we assessed were unexpectedly stable over the course of the first twelve weeks, we analyzed the data from t1 to t3 next (see Table 4.8)—to obtain variance in the data. Prior to analysis, we again applied the same restrictions reported above. After excluding those whose leader changed between t1 and t3, 334 participants remained in the sample at t3. Opportunity (t1) predicted more effort at t3 ($t = 2.51$, $p = .012$), as well as IWB at t3 ($t = 2.85$, $p = .005$), supporting Hypothesis 1. However, responsibility (t1) once again did not predict well-being at t3 ($t = 1.02$, $p = .311$). Thus, based on the entirety of results, Hypothesis 2 is to be rejected. For results of analyses including participants whose leader changed between t1 and t3 as well as outliers, see Table C3 in Appendix C.

Table 4.8

Multiple Regression Analyses of Study 4.3 With Restricted Sample, Testing How Perceived Leader Opportunity and Responsibility (Both t1) Predict Follower Outcomes (t3; N = 334)

	Outcome t3														
	Effort					IWB					Well-being				
Predictor	R^2adj	F	b	SE	p	R^2adj	F	b	SE	p	R^2adj	F	b	SE	p
Model	.686	238.31			< .001	.620	178.50			< .001	.708	262.04			< .001
Outcome (t1)			0.82	0.04	< .001			0.83	0.04	< .001			0.87	0.03	< .001
Opportunity			0.09	0.03	.012			0.14	0.05	.005			0.00	0.02	.950
Responsibility			0.03	0.02	.264			-0.02	0.03	.520			0.02	0.02	.311

Note. For outcome effort t3, ‘outcome t1’ refers to effort t1; for outcome IWB t3, ‘outcome t1’ refers to IWB t1; for outcome well-being t3, ‘outcome t1’ refers to well-being t1.

Additional Analyses.

Reverse Effects. Subsequently, for the t1-t3 lag exclusively, we explored whether the correlations we observed in the cross-sectional data might also be explained via the reverse causal direction, meaning that follower engagement predicts perceived leader opportunity, and that follower well-being predicts perceived leader responsibility at a later point in time. For that purpose, we conducted multiple regression analyses, regressing perceived leader opportunity and responsibility at t3, respectively, on follower effort, IWB, and well-being at t1 (all entered simultaneously as predictors in the model; see Table 4.9) while applying the same restrictions reported above.

In these analyses, we found that greater follower well-being (t1) predicted more perceived leader responsibility at t3 ($t = 2.08$, $p = .038$)—suggesting that the causal relation between the two variables might be inversed to what we initially predicted. Moreover, greater follower effort also predicted more perceived leader responsibility at t3 ($t = 2.06$, $p = .040$). For perceived leader opportunity at t3 as outcome, we found a borderline effect of follower IWB (t1; $t = 1.90$, $p = .059$; all other *t*s < 1.2, all other *p*s > .24).

Table 4.9

Additional Multiple Regression Analyses of Study 4.3 Testing Reverse Effects of How Follower Effort, IWB, and Well-Being (All t1) Predict Perceived Leaders' Construal of Power (t3; N = 379)

	Outcome (t3)									
	Opportunity					Responsibility				
Predictor	R^2adj	*F*	*b*	*SE*	*p*	R^2adj	*F*	*b*	*SE*	*p*
Model	.522	89.99			< .001	.643	147.95			< .001
Outcome (t1)			0.68	0.04	< .001			0.78	0.04	< .001
Effort			0.02	0.05	.633			0.12	0.06	.040
IWB			0.07	0.04	.059			0.06	0.05	.226
Well-being			0.06	0.05	.243			0.15	0.07	.038

Common Method Bias. With all measures of this study relying on only one data source, potential confounding factors, such as common method bias (CMB) come to mind. For this reason, we used Mplus 8.5 (Muthén & Muthén, 2020) to add a common latent factor (CLF) into the cross-sectional multiple regression analyses of t1. After controlling for a CLF, perceived leader opportunity, for instance, still predicted more follower effort ($b = 0.36$, $SE = 0.05$, $p <$

.001) and IWB ($b = 0.28$, $SE = 0.09$, $p < .001$). Thus, a mere common method bias is not sufficient to explain the cross-sectional results.

Discussion

In Study 4.3, we tested our predictions longitudinally. Moreover, we investigated our second hypothesis that perceived leader responsibility predicts more follower well-being. The results of the cross-sectional analyses confirmed our predictions. Between t1 and t2, we found only partial support for Hypothesis 1, as perceived leader opportunity predicted more follower effort but not IWB. Furthermore, at t2, we found no support for Hypothesis 2. When considering the longitudinal effect from t1 to t3, however, perceived leader opportunity predicted both more follower effort and IWB, thus supporting Hypothesis 1. Hypothesis 2 was, again, not supported; however, we found evidence suggesting the reverse causal direction, meaning that greater follower well-being predicted more perceived leader responsibility. It should be noted that we initially did not preregister the exclusion of outliers and only mentioned the exclusion of those whose leader changed as an additional analysis.

General Discussion of Chapter 4

How followers perceive their leader acts as a key determinant of follower behavior (Oc & Bashshur, 2013; Sassenberg & Hamstra, 2017; Yukl & Falbe, 1991). Building upon this general idea, the present work examined the role of leaders' construal of power (as perceived by followers) for follower engagement and well-being. We expected that perceived leader opportunity would predict more follower engagement (Hypothesis 1), and that perceived leader responsibility would predict more follower well-being (Hypothesis 2).

We tested Hypothesis 1 in three studies and Hypothesis 2 in Study 4.3. We found consistent cross-sectional support for Hypothesis 1, though the power construal scales used in Study 4.1 were highly correlated. For this reason, we used newly developed scales as of Study 4.2 that correlated only moderately with one another and accurately differentiated between the two concepts. Longitudinally, in Study 4.3, Hypothesis 1 was supported, when excluding participants whose leader changed between t1 and t3. Thus, the entirety of our results suggests that, indeed, perceived leader opportunity predicts more follower engagement.

Hypothesis 2, in contrast, was not supported in Study 4.3. However, when we explored the reverse causal direction, we found that more follower well-being at t1 predicted greater perceived leader responsibility at t3. These results suggest that, in contrast to perceived leader opportunity, leader responsibility may act as an outcome of follower well-being, rather than vice versa. However, as these analyses were not preregistered and could only be explored in this one study, they need further confirmatory testing.

Strengths and Limitations

In the current research we implemented multiple methodological approaches to investigate our predictions—cross-sectional as well as longitudinal designs—supporting the validity of our findings. However, all three studies conducted here relied only on one data source, which raises possible cause for concern about common method bias. Empirically, this possibility was ruled-out in analyses reported in the results section of Study 4.3.

Furthermore, in this research we did not investigate the effects of leaders' construal of power *per se*, but rather followers' perception thereof. However, in single data source studies relying on followers, rating leaders' behavior as a distal variable of leaders' construal of power is the only viable option of approaching this matter. Moreover, given that our aim was to focus our attention on the non-powerholders, rather than the powerholders, investigating the *behavioral* rather than the cognitive components of leaders' construal of power (as perceived by followers) was in the interest of the research question and constitutes a strength instead of a limitation.

Another strength of the current research lies in the three-wave longitudinal Study 4.3. We implemented three measurement time points to be able to compare the relations between our examined variables with a shorter (i.e., approximately three months) and a longer time lag (i.e., approximately six months). As we found different results between the shorter and longer time interval, the current research showed that the distance between measurement time points can yield different effects in real work settings and, therefore, may encourage other researchers in the field to investigate their research questions via multiple time intervals.

Theoretical Implications

Our findings contribute to power research in several ways. Most of the power research has, thus far, mainly focused on the powerholders, often ignoring the implications that powerholders' construal of power has for non-powerholders (Fousiani & Wisse, 2022; Scholl et al., 2022). The current research targets precisely this research gap by enhancing our knowledge about the relations between (the perception of) leaders' construal of power and specific follower outcomes. As our results show, followers (report to) engage more in their work when they perceive that their leader construes power as opportunity. These findings are in line with approaches to social influence, stating that leaders act as role models in an organizational context, thereby influencing followers' behavior (Decuypere & Schaufeli, 2020; Sassenberg & Hamstra, 2017). The results highlight the role of followers' perception of leaders' construal of power for followers' behavior, and, thus, stress that the implications of how powerless perceive their leader's construal of power should not be neglected.

As for followers perceiving their leader's construal of power as responsibility, we did not find the expected relations. One potential reason for the absence of a relation might lie in the sample, as ratings for well-being were rather high (M_{t2} = 3.21, SD_{t2} = 0.66, M_{t3} = 3.27, SD_{t3} = 0.65, on a scale ranging from 1 to 4). These data might have resulted in a ceiling effect, not allowing for a potential effect to manifest. Future studies might want to consider using alternative measures of well-being, as the scale that we used in the current research (HSCL-10, Tambs, 2004) is a symptom-focused scale that, in hindsight, might have been too specific and not sensitive enough to assess follower well-being as desired here. However, a second reason why we did not observe the expected relation between perceived leader responsibility and well-being might be that the causal relation between the variables could be inverse to what we predicted. Exploratory analyses showed that more follower well-being and effort at t1 predicted more perceived leader responsibility at t3. Possibly, the relation between well-being and responsibility arises from those reporting lower well-being, as the reason for lower well-being might be ascribed to the leader not being responsible enough. However, the opposite might be also be true: followers who report greater well-being might ascribe their well-being to the leader acting responsibly towards them. In any event, the reverse causality suggests that followers' *state* influences how they *perceive* their leader's responsibility, not vice versa. A possible explanation for the reverse causal relation of effort and responsibility might be that in between measurement time points, followers might have received some reward for exerting high effort, which, in turn, led them to perceive greater responsibility in their leader. However, this is highly speculative and requires further testing, as we did not assess what happened in between measurement time points.

Our findings have implications for leadership research as well. In the leadership literature, well-being is often treated as a secondary outcome (Inceoglu et al., 2018; Montano et al., 2017), posing the threat of focusing on performance only and neglecting health-related outcomes for followers. By assessing follower well-being alongside engagement, we targeted this issue, though we found no effect of perceived leader responsibility on well-being, but rather the reverse causal direction. However, the data did not indicate that there was a negative relation between well-being and perceived leader *opportunity* either (although the absence of an effect does allow for concluding that it does not exist). Furthermore, the correlations we found between well-being and, for instance, effort, were positive rather than negative, suggesting that leader opportunity and the higher follower engagement associated with it at least did not disrupt follower well-being.

Implications for Research and Practice

To our knowledge, research on the effects of powerholders' construal of power on the powerless has thus far only used adapted power construal scales that were initially developed for powerholders' point of view. In the current research, we developed and tested a new power construal scale that was tailored specifically to low-power people's (e.g., followers') point of view and, as a result, discriminated between the concepts far better than the merely adapted scales. As research on non-powerholders is still severely lacking in the power literature (Fousiani & Wisse, 2022; Scholl et al., 2022), researchers are therefore now able to use a power construal scale that has been shown to be suitable for research on the powerless part of the power continuum.

Furthermore, the fact that perceived leader opportunity and responsibility correlate only moderately indicates that both concepts might be present simultaneously in one person and, therefore, it might be possible to exert both behaviors and tailor them to the situation as needed. Concerning this matter, practitioners may be able to create interventions that convey knowledge to people in leadership positions about which type of leadership behavior is appropriate for the desired outcome.

Conclusion

In the current research, we investigated the role of followers' perception of their leader's construal of power as opportunity and responsibility for their engagement and well-being. We found that, as hypothesized, more perceived leader opportunity was linked to more follower engagement. Accordingly, followers engage more in their work when they perceive their leader is construing power as opportunity. Regarding the link between perceived leader responsibility and follower well-being, we found the causal direction to be potentially reverse to what we expected, as more follower well-being was related to followers perceiving more leader responsibility; this suggests that followers' general well-being may predict the amount to which they perceive their leader as responsible, not vice versa.

Chapter 5: General Discussion

The current dissertation investigated how the frequency and digitalization of leader-follower interaction relate to how followers feel about their tasks and how they perceive their leader's understanding of their working relationship in times of increasing leader-follower distance. More precisely, the dissertation strove after an understanding of how followers' clarity about their work and their leader's feelings about them can be secured when uncertainty about these very factors is likely elevated. In order to examine this research question, the current dissertation investigated how the frequency and digitalization of interaction between leaders and followers relate to outcomes (1) on a task level and (2) on a relational level. In a last step, the current dissertation linked the task and the relational outcomes to investigate how they relate to each other.

The first empirical chapter, *Chapter 2*, investigated how the frequency and digitalization of leader-follower interaction predict outcomes on a *task* level—that is, whether followers know what to do and how to do it (i.e., goal and norm clarity) and whether they have a sense of responsibility for engaging in their tasks (i.e., perceived task responsibility). The results of three studies showed that the frequency, but not digitalization of leader-follower interaction predicted better task-related outcomes. Put differently, the higher the frequency with which leaders and followers interacted with each other, the more clarity followers had about their work-related goals and norms, and the more responsibility they felt for their tasks, while digitalization of interaction was largely unrelated to the outcomes. Furthermore, in a fourth study, the findings showed that frequency contributed to better task-related outcomes through subjectively providing more opportunities for more work-related information sharing between leader and follower. In sum, the findings of *Chapter 2* illustrate that not the mode (i.e., the amount of digitalized vs. face-to-face contact), but the frequency with which leader and followers are in touch with each other is important for how aware followers are of what is expected from them and the amount of responsibility they assume for their tasks. The findings further shed light upon the likely process involved, showing that a greater frequency is related to providing leaders and followers with more opportunities for sharing work-related information.

The second empirical chapter, *Chapter 3*, targeted the role of frequency and digitalization of interaction for outcomes on a *relational* level—that is, followers perceiving that their leader cares about them (i.e., leader responsibility) and/or is focused on goal achievement (i.e., leader opportunity). The results of two longitudinal studies showed that, contrary to the hypotheses, neither frequency nor digitalization of interaction predicted perceived leader opportunity or responsibility. However, exploratory findings suggested that more perceived leader opportunity predicted a higher frequency of interaction. Accordingly, the findings suggest that how followers perceive their leader (i.e., how many opportunities the leader sees in pursuing goals in their role) might rather influence the frequency of their interactions, not vice versa. In sum, *Chapter 3* sheds light upon how effective leader-follower collaboration might be ensured, by suggesting that a specific leadership strategy (i.e., perceived leader opportunity) might contribute to more frequent leader-follower interactions.

The third and final empirical chapter of the current dissertation, *Chapter 4*, investigated whether followers' perception of their leader contributes to the extent to which they engage in their tasks and how well they feel. Thus, it links the task and the relational level examined in the first two empirical chapters by investigating how followers' perceived leader opportunity and responsibility relate to task-related outcomes (i.e., follower engagement) and well-being. Consistent over three studies, results showed that the more leader opportunity followers perceived, the more they engaged in their tasks. The predicted relation between perceived leader responsibility and follower well-being, however, was inverted—that is, the more well-being followers reported, the more they perceived their leader as construing power as responsibility. In sum, *Chapter 4* highlights that how followers perceive their leader's construal of power—a to date understudied construct—has important implications for organizational success. More specifically, it suggests that when followers perceive that their leader appreciates feeling in control while focusing on goal attainment (i.e., construes power as opportunity) they engage more in their tasks—while potential implications of followers perceiving their leader as feeling responsible for them (i.e., construes power as responsibility) remain unclear (beyond better relational quality; Fousiani & Wisse, 2022).

Taken together, the current dissertation highlights the relevance of frequent leader-follower interactions for outcomes on a task level, by showing that a higher frequency of interaction contributed to more follower goal clarity, norm clarity, and perceived task responsibility—while the digitalization (i.e., the mode) of interaction does not seem to play a role for these outcomes. Furthermore, the current dissertation suggests that there might be an underlying relational factor that contributes to both better outcomes on the task level (i.e., engagement) and a higher frequency of interaction—namely followers' perception of leader opportunity. Thereby, the current dissertation contributes to an understanding of how effective leader-follower collaboration can be ensured despite an (on average) increasing distance between them. In the following section, strengths and limitations of the empirical approach of the dissertation will be discussed. Subsequently, I will outline theoretical implications of the current dissertation for research on leadership and construal of power. Last, the General Discussion closes with implications for practice.

Strengths and Limitations

Strengths

The current dissertation shows strengths on both the methodological and the theoretical level. First, on the methodological level, a strength of the current dissertation is that all its studies were conducted in real work settings across organizational contexts. This fact makes a strong case for the external validity of the reported findings, as the results are likely applicable to a wide array of jobs, therefore being of interest to different fields of work. Further increasing its methodological strength, the current dissertation applied multiple different methodological approaches in the conducted studies (i.e., cross-sectional, longitudinal, and quasi-experimental). Although these approaches do not allow for direct conclusions regarding causality, the convergence of different methodological approaches provides a strong argument for the validity of the findings reported in the studies which are of high relevance to the current work-related situation.

This relevance is emphasized further by the dissertation being innovative on a theoretical level. Indeed, it examined variables that are scarcely researched (cf. Fousiani & Wisse, 2022; Scholl et al., 2022; Shockley et al., 2021)—despite being highly relevant to the contemporary state of the work environment. It investigated how the frequency and digitalization of leader-follower interaction—two aspects that are affected by the increasing distance between leaders and followers (cf. Kahai, 2013)—influence followers (1) on a task level and (2) on a relational level. Doing so, the current dissertation showed that the frequency of leader-follower interaction predicts more follower goal clarity, norm clarity, and perceived task responsibility (see *Chapter 2*)—variables of high importance for follower performance and, ultimately, organizational success (e.g., Locke & Latham, 2002; van Knippenberg & Stam, 2014; Yukl & Gardner, 2020)—and that these relations arise by means of more work-related information sharing. As the digitalization of leader-follower interaction was largely unrelated to the task-related outcomes, the present dissertation highlights that the *amount*, rather than the *means* of contact, is important for making followers aware of what they have to do and how to do it, as well as eliciting their sense of responsibility for their tasks. Furthermore, the current dissertation adds to a branch of research on construal of power that is mostly unresearched thus far (for an exception see Fousiani & Wisse, 2022). Prior research on construal of power has focused mostly on how it affects powerholders. By investigating how followers (i.e., those with lower power) perceive leaders' (i.e., powerholders') construal of power, the current dissertation adds to a more comprehensive understanding of this construct.

Limitations

The current dissertation is also subject to several limitations. First and foremost, all studies reported in the current dissertation relied on self-report measures. The fact that all studies used only a single data source (i.e., followers) harbors the danger of common method bias, which refers to the results of the studies being skewed by predictor and outcome variables being rated by the same respondent (Podsakoff et al., 2003). This can lead to a systematic increase in the observed relationships between the examined variables. However, the current dissertation took several steps in the design of the surveys to minimize the probability of the results being influenced by common method bias. For instance, the studies conducted in the current dissertation employed several measures that constituted rather objective appraisals, such as the frequency of interaction. This measure (and, in part, also digitalization of interaction) was rated based on actual interactions (e.g., "many times daily"; McAllister, 1995)—thereby diminishing the danger of a response bias (however, it should be noted that the frequency of interaction still was not assessed in a completely objective way). Furthermore, in *Chapter 3* and *Chapter 4*, I applied structural equation modeling (Muthén & Muthén, 2020) in order to control for a common latent factor in the models that were analyzed. In doing so, a factor resulting from potential systematic answering patterns was empirically accounted for. As in both *Chapter 3* and *Chapter 4* the observed relations stayed significant even after controlling for the common latent factor, the studies' results most likely cannot be explained by a mere common method bias. Still, it would be desirable for future research to conduct multi-source studies—that is, investigating followers *and* their respective leaders so that the tested variables can be assessed from different sources.

This approach would also allow obtaining third-party ratings of actual follower behavior. This is particularly relevant for the measure of engagement investigated in *Chapter 4*, as this variable aims at targeting follower behavior in particular. Accordingly, the question arises, how followers' self-reported work engagement translates into *actual* engagement (i.e., behavior). Future studies could address this issue in several ways. First, experimental studies in a laboratory setting are a possibility. In this way, it would be feasible to present followers with tasks and measure their effort in engaging in these tasks. This avenue, however, comes with its own limitations, as the results produced in such laboratory settings come at the cost of external validity—that is, whether they are applicable to real work settings in organizations.

Nonetheless, it would also allow tackling an additional limitation of the present dissertation: the predominantly correlational nature of the data, which makes drawing firm conclusions regarding causality difficult. To allow for such conclusions, it is necessary to apply experimental designs—so that the predictor variable can be manipulated in a controlled setting and the outcome variable can be assessed *after* the manipulation took place. In Studies 2.3 and 2.4, I strove to address this issue by implementing quasi-experimental recall designs. Here, I quasi-experimentally "manipulated" frequency of interaction (i.e., induced different levels of recalled frequency of interaction) and subsequently assessed the outcome variables, also about a recalled time. This approach ensures that, within the studies, the manipulation of the independent variable takes place before assessing the outcome variables. However, the *actual occurrence* of the outcome variables in the field (i.e., followers' goal clarity, norm clarity, and perceived task responsibility) still happened *before* the (quasi-) experimental manipulation within the study. Hence, causality cannot be inferred by this method. Nevertheless, as argued above, the implementation of different methodological approaches (i.e., cross-sectional, longitudinal, and quasi-experimental) lends plausible support to the validity of the observed findings.

Aside from making drawing causal conclusions difficult, the correlational approach chosen in the present work also opens up the possibility that unobserved third variables might have caused the observed relationships between the focal variables. For instance, theoretically, it is possible that followers' satisfaction with the leader might have influenced some of the results reported in the current dissertation (e.g., more follower engagement, more perceived task responsibility). However, due to the presence of differential effects (see *Chapter 4*) it is unlikely that the findings are attributable to *one specific* third variable. Additionally, the common latent factor analyses conducted in *Chapters 3* and *4* (see above) also speak against the possibility of one variable explaining the observed results.

Moreover, as another limitation, digitalization of interaction was (mainly) assessed "across the board" in the current dissertation—that is, the measure referred to digital contact in general and not to different types of digital media. However, there are substantial differences between specific kinds of digital media regarding the richness of the information that they transfer (Daft & Lengel, 1986; Daft et al., 1987). For this reason, it is conceivable that digital contact might produce effects when differentiating between the medium used for communication (for a more detailed discussion on this matter, see below). Yet, in *Chapter 2*, I took this possibility into account by assessing the type of medium mainly used when communicating digitally, which was not related to the outcomes investigated here. However, these analyses were only exploratory. Thus, confirmatory testing is needed that furthermore includes *all* media used for communicating digitally instead of only the medium *mainly* used. Possibly, this procedure might yield different results than those observed in the current dissertation.

Further limitations concern individual empirical chapters of the current dissertation. First, several studies reported in this dissertation (i.e., those reported in *Chapter 2*) were conducted during the COVID-19 lockdown phase or between lockdowns, which likely constituted an unfamiliar situation for many employees. This needs to be considered when interpreting the results reported in *Chapter 2* (for a more detailed discussion on this matter, see below). Similarly, the results of *Chapter 3* need to be interpreted with caution as well. This chapter investigated whether frequency of interaction predicts more perceived leader opportunity and responsibility, and whether digitalization of interaction predicts less perceived leader opportunity. The main findings in this study, however, originate from exploratory analyses, as the posited hypotheses were not supported. Accordingly, the findings reported in this chapter do not stem from confirmatory testing. Further research is needed that replicates the findings by means of confirmatory testing.

Implications for Theory and Future Research Directions

How the Present Findings Contribute to Leadership Research

The current dissertation contributes to leadership research by focusing on the *frequency* of leader-follower interaction, an aspect of leadership that has been widely neglected in prior research (cf. Shockley et al., 2021). By showing that more frequent interactions contribute to better task-related outcomes by means of more work-related information sharing (*Chapter 2*), the current dissertation addresses a major drawback of research on this variable: the absence of a theoretical framework explaining how the frequency of leader-follower interaction might contribute to individual performance (Shockley et al., 2021). Notably, I investigated this only by means of targeting a mediational process. Notwithstanding, the current dissertation thereby takes a step towards understanding what the frequency of interaction does and how it may shape subsequent positive results—namely, by providing opportunities for leaders and followers to *exchange information* necessary for followers to understand what is expected of them. As such, the present work contributes to understanding the potential processes and likely outcomes of more frequent leader-follower interaction at work.

While the present dissertation paints a comparatively optimistic picture of the effects of frequent interactions, prior researchers' work implies that some caution may be warranted when increasing interaction frequency. For instance, at some point, too frequent interactions might lead to communication overload (e.g., Stephens et al., 2017)—meaning that followers may no longer be able to process the communicated information properly. This can lead to a host of negative outcomes (e.g., more stress and lower job satisfaction; for a review, see Eppler & Mengis, 2004). Furthermore, the content of the interactions may matter—in case followers are already aware of what they have to do, further attempts by the leader to clarify to followers what is expected of them might be interpreted by followers as exerting unnecessary control (House, 1971; House & Mitchell, 1974). The present dissertation, however, did not provide evidence that there can be "too much of a good thing"—that is, that frequency of interaction can become too high.

There are several possible reasons why that might have been the case. First, as discussed in the introduction of the current dissertation, the contemporary situation in the work environment likely implies some work-related uncertainty for followers. This has been exacerbated by the COVID-19 pandemic, during which all studies reported in *Chapter 2* of the current dissertation were conducted and which potentially increased the risk of followers being confused or uncertain about their goals and responsibilities even more. Accordingly, followers' work-related situation might have constituted an unfamiliar environment, a point in time during which more frequent interactions might have been particularly advantageous (see Shockley et al., 2021). Replicating the results at a later point in time would shed more light on this idea.

Second, it is conceivable that it is not the mere frequency of interaction that, at a certain point, yields negative outcomes (such as perceptions of unnecessary control; House, 1971; House & Mitchell, 1974), but rather the *content* of the interactions. On the one hand, frequent interactions with the leader enable followers to seek feedback and ask questions should there be any work-related ambiguity or even to gain clarity by coincidence when helpful information turns up during an informal encounter with the leader. On the other hand, however, the leader may use interaction to constantly ask about the status quo and exercise (unnecessary) control. In such a case, highly frequent interactions will likely negatively affect followers' work satisfaction and confidence, for instance. This idea might be related to which style of leadership the leader exercises. For example, followers might perceive a mainly transactional leadership style (i.e., relying on corrective action; Bass & Avolio, 1997) coupled with very frequent interactions as controlling and confining. Frequent interactions with a leader showing responsibility for their followers (e.g., servant leadership; e.g., van Dierendonck, 2011), in contrast, may have more positive outcomes—as followers might interpret these interactions as efforts by the leader to take care of them. These ideas constitute an interesting avenue for future research—as exploring a potential moderating role of leadership style (or the content of interactions) might contribute to a more comprehensive theoretical framework of the effects of the frequency of leader-follower interaction (but note the discussion on conceptual issues with established leadership constructs elaborated in the introduction; e.g., Decuypere & Schaufeli, 2020; Fischer & Sitkin, 2023; van Knippenberg & Sitkin, 2013; Yukl & Gardner, 2020).

Third, it is possible that most leaders simply do not have enough time to interact *too frequently* with their followers. While communication with their followers constitutes an important part of leaders' tasks (e.g., Nifadkar et al., 2019; Yammarino et al., 2001), leaders typically still have a multitude of other duties that demand their attention. The moderate descriptive values of frequency in the current dissertation support this argument (e.g., $M = 4.40$ on a seven-point scale ranging from 1 = "Once or twice in six months" to 7 = "Many times daily" in Study 2.1). Accordingly, even a high frequency of interaction may have been unlikely to be perceived as too frequent by followers, who thus profited rather than suffered from frequent interactions concerning task-related outcomes.

Notwithstanding the role of frequency for better task-related outcomes, the current dissertation yielded unexpected findings regarding its implications for followers on a relational level (*Chapter 3*). While I hypothesized that frequency would predict more perceived leader opportunity and responsibility among followers, the results rather suggested the opposite direction—as perceived leader opportunity predicted more frequency of interaction. In other words, the more followers perceived their leader as feeling in control and focused on goal achievement, the more frequently they interacted with their leader at a later point in time. In view of the overall model tested in the current dissertation (see Figure 1.1), perceived construal of power (i.e., perceived leader opportunity) accordingly seems to constitute a *predictor* of frequency, rather than an outcome. The reciprocal nature of leader-follower interactions may provide an explanation for this finding—as not only the leader but also the follower can initiate contact. Accordingly, perceiving leader opportunity (i.e., that the leader is oriented towards goal attainment) might cause followers to *seek* more contact with their leader—because followers perceiving these aspects in their leader might lead to them being more focused on goal achievement themselves. Seeking more contact with their leader might, thus, constitute a means by which followers can ensure fast and consistent goal progress. Adopting this view, these findings then tie in with the results of *Chapter 4*, which showed that perceived leader opportunity predicted more follower engagement; possibly, seeking more frequent contact with the leader constitutes an indication of followers showing more engagement in their work. Accordingly, both *Chapters 3* and *4* would support the notion that followers perceiving more leader opportunity engage more in their work. This idea, however, is speculative and is in need of further testing that investigates how perceived leader opportunity contributes to the amount of followers' contact seeking in particular.

These findings and ideas raise the question of how (perceived) construal of power can be distinguished from established leadership strategies and behaviors that are argued to influence followers' behavior as well (cf. Brown et al., 2005; Decuypere & Schaufeli, 2020; Sassenberg & Hamstra, 2017). Indeed, there exists some conceptual overlap between construal of power and established leadership constructs. For instance, behaviors associated with construing power as opportunity show conceptual overlap with initiating structure (e.g., Stogdill, 1963), which is composed of directive and autocratic leadership. The latter refers to making decisions without consulting team members (Burke et al., 2006), which shows considerable similarities with the neglect of others' advice that is associated with opportunity (for an overview, see Scholl et al., 2022). Conversely, construing power as responsibility shows similarities to exhibiting consideration as a leader (e.g., Stogdill, 1963); the emphasis on the satisfaction of followers' needs and group cohesion associated therewith (Burke et al., 2006) is similar to a responsibility construal's association with taking others more into account (for an overview, see Scholl et al., 2022). Put simply, by and large, an opportunity construal of power shows conceptual overlap to more agentic leadership behaviors and styles (e.g., self-serving leadership behavior; Rus et al., 2010)—whereas responsibility shows similarities to several constructs that stress leader responsibility as a central tenet (e.g., ethical leadership and servant leadership; den Hartog, 2015; van Dierendonck, 2011; for a summary, see Fousiani & Wisse, 2022). However, (followers' perception of) leaders' construal of power refers to the (perception of the) *cognitive appraisal* of the leadership role, which might *subsequently* influence leader behavior. This distinguishes construal of power from leadership constructs on a theoretical level, as the latter mainly refer to leader behaviors per se. Furthermore, the dichotomous nature of (perceived) construal of power constitutes another difference to established leadership constructs—the differential effects as well as the small correlation between the two concepts (see *Chapter 4*) suggest that they might operate independently of each other. Accordingly, leaders should theoretically be able to construe power both as opportunity and as responsibility (cf. Scholl et al., 2022). Equally, followers should also be able to *perceive* both leader responsibility and opportunity. Thereby, construal of power allows treating subsequent outcomes differentially. This constitutes another difference between construal of power and other leadership styles which often treat subsequent outcomes in a rather non-differentiated way. Accordingly, perceived construal of power constitutes an aspect of leadership that is theoretically distinct from other established leadership strategies. Still, despite this theoretical distinction, more research is needed regarding the overlap between construal of power and related leadership constructs in order to make clear how they relate to each other on an empirical level.

Taken together, the findings concerning perceived construal of power provide important insights relevant to the leadership literature, as they suggest that followers' perception of a specific leadership strategy (i.e., leader opportunity) can ensure that followers are more (motivated to) engage at work. Accordingly, the results support approaches to the social influence of leadership on followers (e.g., Brown et al., 2005; Decuypere & Schaufeli, 2020; Sassenberg & Hamstra, 2017) which argue that how followers perceive their leader's behavior subsequently influences their own behavior (but note the limitation regarding behavior mentioned above). The current dissertation extends these approaches by suggesting that this mechanism might also apply to followers' perception of how their leader construes the power accompanying the leadership position—as perceiving more leader opportunity may signal to followers that the leader appreciates "taking action" on the way to goal attainment. Investigating whether perceiving leader responsibility triggers such a social influence mechanism as well constitutes an interesting avenue for future research. For instance, followers perceiving more leader responsibility might themselves engage in more socially responsible behaviors—be it towards the leader (e.g., supporting the leader more) or towards coworkers (e.g., assisting them with demanding task assignments).

A variable that, in contrast, does not seem to be linked to outcomes such as follower engagement is the *digitalization* of leader-follower interaction. Both the findings of *Chapter 2* and *Chapter 3* suggest that, nowadays, the mode of interaction does not play such a big role anymore for leadership outcomes as investigated here. Regarding both the task level (see *Chapter 2*) and the relational level (see *Chapter 3*), the expected negative relation (i.e., higher digitalization of interaction being linked to worse outcomes on the task and relational level) was not found. Therefore, the findings are relevant to the leadership literature as they suggest that digitalized interaction between leaders and followers does neither disrupt followers' clarity about their work-related goals and responsibilities nor about their leader perception. Potentially, nowadays, people's experience with digital media at large prevents the disruptive effects that digitalization was argued to have in the past (e.g., Daft & Lengel, 1986; Daft et al., 1987; Hoch & Kozlowski, 2014). Indeed, the perceived richness of a digital medium seems to not constitute a stable factor but is rather dependent on people's attitudes towards and experience with the medium (for a review, see Ishii et al., 2019). Accordingly, followers experience with the digital medium used to interact with their leader might attenuate negative effects of digital communication. In line with this idea, the medium *mainly used* by leaders and followers did not yield effects on the task-related outcomes investigated in *Chapter 2*. However, future studies should investigate whether this pattern of results changes when leaders and followers interact through a medium that they have less experience with. Furthermore, another notion of media-richness theory (Daft & Lengel, 1986; Daft et al., 1987) is that the optimal degree of information richness also depends on the complexity of a given task. For instance, tasks with less complexity might benefit from a "leaner" (i.e., less rich) communication channel (e.g., email). As the studies conducted as part of the current dissertation did not differentiate between the complexity of followers' goals and tasks, an influence of task complexity cannot be ruled out. Future research on this matter should assess the complexity of followers' goals and tasks in order to fully disentangle the role of the digitalization of leader-follower interaction for outcomes on a task level.

Considering Moderators of the Effects of Perceived Construal of Power

The current dissertation contributes to research on construal of power by focusing on followers' perception of how leaders construe power (*Chapters 3* and *4*), thereby adopting the view of the dependent part in the power continuum—an aspect that has been widely neglected in previous research (Fousiani & Wisse, 2022; Scholl et al., 2022). In sum, the studies reported in the current dissertation suggest that followers' perception of leader opportunity acts as predictor of subsequent outcomes, both in the case of frequency of interaction (*Chapter 3*) and follower engagement (*Chapter 4*). Thereby, the current dissertation goes beyond prior research on construal of power, as it shows that the way in which followers perceive leaders' construal of power can have far-reaching implications—highlighting the need for more research on how the dependent part in the power relationship (i.e., followers) is affected by construal of power (cf. Fousiani & Wisse, 2022; Scholl et al., 2022).

However, as the present findings emphasize the benefits of perceived *opportunity* in particular, the question arises whether followers perceiving leader opportunity always implies better outcomes for followers (e.g., more engagement). This question becomes especially relevant when considering that construing power as opportunity is often argued as entailing negative consequences (such as selfish behavior; for an overview, see Scholl et al., 2022). At this point, it is important to untangle what construal of power *is* and what it *is not*. As elaborated above, the construal of power refers to how powerholders *cognitively appraise* their power. Therefore, it is *theoretically independent* of the type of goal that is pursued—put simply, it is possible to recognize the *opportunities* of one's high-power role while pursuing a *social goal* (i.e., benefiting others), just as it is possible to feel the *responsibility* of achieving one's *own goals* (benefiting oneself) and making decisions. Speculatively, perceiving leader opportunity is especially beneficial for followers when it is not coupled with the perception of the leader pursuing selfish goals. As of yet, however, the perceived construal scales—as well as those from Scholl et al. (2017) which served as a basis for the development of the scales used in the current dissertation—primarily assess opportunity in terms of opportunities for the leader, just as they assess responsibility in terms of social responsibility (i.e., towards others). Hence, the measures may have somewhat confounded type of goal and construal. Taken together, the specific implications that perceived leader opportunity and responsibility have for followers might be moderated by the type of goal they feel the leader pursues with either construal. For instance, followers perceiving leader opportunity coupled with goals that only benefit the leader will likely have different consequences than when the achievement of goals rather benefits the whole team or the organization. Thus, to completely comprehend the consequences of (perceived) construal of power, future research is needed that assesses opportunity and responsibility in their entirety or additionally assesses the type of goal that followers perceive the leader pursues (see Scholl et al., 2022, for a deeper discussion on this matter).

In addition to the role of goal content, there are several further factors to consider that might moderate the effect that perceiving leader opportunity or responsibility has on followers. More specifically, I assume that followers might differ regarding their preferred leader construal of power—while some followers might prefer the leader to construe power as opportunity, others might rather prefer responsibility. Depending on this preference, and whether it matches followers' actual perception of their leader's construal of power—that is, in case of a *fit* (e.g., Kruglansky et al., 2007)—perceived construal of power might yield different effects on followers. This raises the question of which factors might influence which type of construal followers prefer in their leader. Here, two factors come into consideration, namely followers' *cultural orientation* and their *regulatory mode*.

The first factor potentially influencing followers' preferences regarding their leader's construal of power is followers' cultural orientation (cf. Triandis, 1996). Culture has been argued to constitute a key determinant of how power is conceptualized (Torelli & Shavitt, 2010). As such, there are likely differences between Western (i.e., individualist) and Eastern (i.e., collectivist) societies about how the use of power is legitimized (Chiu & Hong, 2006). These differences likely also translate into the (default) way in which power is construed by powerholders—in that individualist values will likely foster a construal of power as opportunity, while collectivist values will, in contrast, benefit a construal of power as responsibility (Scholl et al., 2022). What implications might these differences have from followers' point of view? Depending on their cultural orientation, followers might have different expectations of how a leader typically acts—in that followers in individualist cultures might expect leaders to construe power as opportunity and followers in collectivist cultures might expect leaders to construe power as responsibility. These ideas link to the so-called implicit leadership theories (see Eden & Leviatan, 1975), according to which followers develop cognitive structures (i.e., schemas) about which traits and behaviors prototypical leaders possess. Empirical findings suggest that a fit between followers' implicit leadership theories and actual observed leader behavior yields positive outcomes (e.g., better relational quality; Epitropaki & Martin, 2005; see also Fousiani & Wisse, 2022). In case of the current dissertation, which carried out its studies in Germany and the UK (i.e., more individualist societies), followers might primarily hold implicit leadership theories about leaders construing power as opportunity. Thus, perceived leader opportunity fit this expectation, which might partially explain the positive effect of perceived leader opportunity on follower work engagement, while perceived leader responsibility was largely unrelated to subsequent outcomes (see *Chapter 4*). It is, however, conceivable that followers with an orientation towards collectivist values might hold different implicit leadership theories (i.e., expect leaders to construe power as responsibility)—as in such cultures, power is typically associated to a greater extent with responsibility (Zhong et al., 2005). In such a case, a differing pattern of results is possible, as the "boosting" effect of a fit between implicit leadership theories and observed behavior (cf. Epitropaki & Martin, 2005; Fousiani & Wisse, 2022) might rather emerge in case of perceived leader responsibility.

In sum, it is possible that the effects of perceived construal of power on followers depends on their cultural orientation—while followers holding individualist values might benefit particularly from perceived opportunity, those holding collectivist values might rather benefit from perceived leader responsibility. For this reason, future research on outcomes of followers' perceived leader construal of power should take followers' cultural orientation into account. This becomes especially relevant in the context of the state of the current work environment, where virtual teams consisting of employees from different countries with a multitude of different cultural backgrounds are becoming commonplace—as how followers perceive their leader's construal of power might yield differential effects, depending on those characteristics.

Another factor that might influence followers' preferences regarding their leader's construal of power is followers' regulatory mode. Regulatory Mode Theory (Kruglanski et al., 2000) differentiates between two distinct self-regulatory modes—that is, motivational tendencies—that predict behavior and cognition on the way to goal-pursuit. Individuals in a *locomotion mode* are concerned with moving from state to state—that is, they constantly initiate and sustain movement. Individuals in an *assessment mode*, in contrast, are mainly concerned with making comparisons and, accordingly, often evaluate their current states regarding goal progress (Higgins et al., 2003). Evidently, there seems to be considerable overlap between construal of power and self-regulatory modes—in that a construal of power as opportunity benefits similar outcomes as locomotion mode, and a construal of power as responsibility benefits similar outcomes as assessment mode (Scholl et al., 2022). Scholl et al. (2021) provided initial evidence for this idea, showing that one's own construal of power as opportunity was, indeed, related to one's own locomotion mode, while responsibility was rather related to assessment mode. What does this imply for leader-follower collaboration and subsequent follower outcomes? *Regulatory fit*—that is, a congruence between followers' regulatory mode and their leader's style of strategic influence—has been shown to have positive effects on followers, such as more job satisfaction and motivation (Benjamin & Flynn, 2006; Kruglanski et al., 2007). Accordingly, it is conceivable that followers in a locomotion mode may experience a greater regulatory fit when they perceive their leader to construe power as opportunity, while those in an assessment mode will likely do so when they perceive their leader to construe power as responsibility. Supporting this argument, Kruglanski et al. (2007) showed that individuals high in locomotion mode prefer more directive leadership styles, while those in assessment mode prefer more advisory and participative leadership styles.

In sum, followers might have different preferences regarding their leader's construal of power depending on their regulatory mode: while some individuals might prefer perceiving their leader as very focused on a focal goal and appreciate moving forward (i.e., construing power as opportunity), others might prefer their leader as being very mindful of them and taking their situation into account (i.e., construing power as responsibility). Future studies should address this possibility by assessing followers' regulatory mode as a potential moderator of the relationship between perceived construal of power and subsequent outcomes. It is conceivable that followers in assessment mode might not benefit from perceiving leader opportunity in the same way as followers in locomotion mode. In doing so, future research could shed light upon potential moderators of the outcomes of perceived leader opportunity and responsibility.

What About Antecedents of Perceived Construal of Power?

A further future research direction concerns potential antecedents of perceived construal of power. As the frequency (and potentially the digitalization) of interaction have been found to constitute outcomes rather than predictors of perceived construal of power (i.e., perceived leader opportunity; see *Chapter 3*), the question of what these antecedents might be is still unresolved. For this reason, future research on this matter needs to identify what might predict followers' perception of their leader's construal of power, so that leaders know how they can influence the way they are perceived by followers—thereby benefiting from the consequences of a specific perceived power construal (e.g., more follower engagement; see *Chapter 4*). A potential antecedent that comes into consideration here is leaders' own construal of power. How leaders behave is, to a great extent, influenced by how they construe the power that their leadership role entails (Bendahan et al., 2015). Followers, in turn, base their assessment of their leader's construal on the behavior the leader exhibits. Accordingly, leaders' construal of power might act as an antecedent of how followers perceive leaders' construal of power, mediated via leader behavior consistent with a certain construal. Yielding preliminary evidence for this idea, Purr (2018) found small to moderate positive correlations between leaders' construal of power and followers' perception thereof in a multi-source study investigating leaders and their respective followers—in that leaders' own opportunity correlated with followers' perceived leader opportunity and leader's own responsibility correlated with followers' perceived leader responsibility. In this study, however, followers' perceived leader opportunity and responsibility were assessed through leaders' construal of power scales that were merely adapted to followers' point of view. Potentially, replicating this study while implementing the perceived construal of power scales created in the current dissertation might yield different (i.e., potentially stronger) results. However, it is also conceivable that followers' perceptions of leader opportunity and responsibility rather arise through lay theories (e.g., implicit leadership theories, see above). Indeed, followers might associate specific leader behaviors with a specific construal of power, irrespective of the leader's own construal of power. For instance, followers might see a leader's decision to discharge several employees as benefiting the leader's own good (i.e., perceive opportunity), while the leader saw this decision as their duty in order to save the jobs of their other employees (i.e., construes power as responsibility). Accordingly, it *is* possible that followers' perceptions of leader opportunity and responsibility are influenced by factors other than leaders' own construal of power, such as followers' lay theories (e.g., how does a responsible leader typically behave), but also, for instance, how they perceive their leader's *personality* (e.g., as benevolent or reliable). By taking these factors into account, future research might address the question of whether followers' perceptions of leader opportunity and responsibility are influenced by their leader's own construal of power or whether they are rather formed through other factors (see above)—thereby contributing to knowledge about potential antecedents of perceived construal of power.

Implications for Practice

The studies presented in the current dissertation have practical implications. Due to the increasing distance between leaders and followers, understanding which factors can contribute to followers being aware of their goals, norms, and responsibilities as well as how their leader feels about them is vital for effective leader-follower collaboration and organizational success (e.g., Anderson & Stritch, 2016; Fousiani & Wisse, 2022; Raziq et al., 2018; Yukl & Gardner, 2020). The current results are relevant for leaders and organizations, as they highlight that leaders may want to focus on maintaining frequent interactions with their followers, as this will likely ensure that followers know what they are expected to do, how to do it, and assume responsibility for their tasks. As these frequent interactions may actively be shaped by leaders, the current dissertation thereby provides important insights into how leaders can ensure high follower performance. In addition to this, the amount of digitalized contact does not seem to play a role here, which entails a positive message regarding the changes in the contemporary work environment—as followers can be made aware of their tasks and responsibilities regardless of how (i.e., via which mode) they interact with their leader.

Last, the current dissertation suggests that followers' perception of their leader construing power as opportunity and, thus, as practicing a specific leadership strategy that focuses on movement and goal attainment might elicit more engagement in followers. Furthermore, this perception might also encourage followers to seek more contact—thereby benefiting goal progress and ultimately performance as well. Accordingly, leaders should be mindful of how followers perceive them in their work relationship, as this perception might have extensive implications for variables important for organizational success.

Conclusion

Due to flexible work models, globalization, and virtual work arrangements, the current work environment is undergoing massive changes that affect how leaders and followers work with each other—as these factors involve an increasing distance between them (Rudolph et al., 2020). Thus, understanding how leaders and followers can maintain effective collaboration despite these changes is a vital endeavor for organizations nowadays. The current dissertation adds to this understanding by highlighting that followers' leader perception predicts their engagement and the frequency with which they interact with their leader. Furthermore, it emphasizes that the frequency, rather than the digitalization of leader-follower interaction is important for ensuring followers' clarity on a task level. Accordingly, the current dissertation provides important insights into how leaders can ensure high follower performance, irrespective of *how* they interact with each other. In sum, the current dissertation speaks in favor of flexible work models, as it suggests that the increasing distance between leaders and followers might not disrupt effective collaboration, provided that they stay in touch with each other.

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Appendix

Appendix A – Additional Information for Chapter 2

Deviations From Preregistrations

Study	Paper vs. Preregistration
Study 2.1	*Variable labels:* *Paper*: predictor is labeled frequency of interaction *Preregistration*: predictor is labeled interaction frequency *Paper*: variable is labeled norm clarity *Preregistration*: variable is labeled norms clarity *Hypotheses*: *Paper*: order of H1 and H3 are reversed (vs. Preregistration) *Paper*: H5 predicts an effect of digitalization on the outcomes; this hypothesis was not included in the preregistration (in which we intended to use digitalization only as control variable, see below) *Paper:* "Followers" were initially named "subordinates" in the preregistration *Analyses*: *Paper*: digitalization is labeled predictor and treated as such *Preregistration*: digitalization is labeled control variable
Study 2.2	*Variable labels:* *Paper*: variable is labeled goal clarity *Preregistration*: variable is labeled clarity of goals *Analyses and hypotheses*: *Paper*: tests the effects of frequency and digitalization on leadership outcomes *Preregistration*: original aim was to test whether frequency moderates the relationship between organizational guidance (i.e., transformational leadership, clarity of goals, norm clarity, and subordinates' perceived task responsibility) and leadership outcomes in subordinates (i.e., autonomous motivation and perceived leadership effectiveness).
Study 2.3	*Variable labels:* *Paper:* variable is labeled opportunities for work-related information sharing *Preregistration:* variable is labeled work-related information sharing
Study 2.4	*Variable labels:* *Paper:* condition is labeled "high/low opportunities work-related information sharing" *Preregistration:* condition is labeled "high/low work-related information sharing" *Hypotheses:* *Paper*: H4 predicts opportunities for work-related information sharing as mediator of the relations between frequency and the outcomes *Preregistration*: the specific hypothesis preregistered here follows the quasi-experimental design logic and refers to the *second* path of the mediation (mediator => outcome); accordingly, it predicts that high (vs. low) work-related information sharing between leader and follower leads to (a) more follower goal clarity, (b) more follower norm clarity, and (c) more follower perceived task responsibility.

Additional Information for Study 2.1

Pre-Registration

Created:	02/04/2021 11:46 PM (PT)
Made public:	12/07/2022 06:42 AM (PT)
Available at:	https://aspredicted.org/c4bn5.pdf

1) Have any data been collected for this study already?

No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?

RQ: Does interaction frequency predict better leadership outcomes among subordinates in a virtual work environment?

H1: The higher the interaction frequency of subordinates with their leader, the higher will be subordinates' perceived task responsibility.

H2: The higher the interaction frequency of subordinates with their leader, the higher will be subordinates' goal clarity.

H3: The higher the interaction frequency of subordinates with their leader, the higher will be subordinates' norms clarity.

3) Describe the key dependent variable(s) specifying how they will be measured.

DV1: Perceived task responsibility (of subordinates; 5 items)

DV2: Goal clarity (clarity of goals and tasks; 4 items) over the last 6 months

DV3: Norms clarity (8 items)

4) How many and which conditions will participants be assigned to?

No experimental conditions. The study has a correlative cross-sectional design.

Predictor: Interaction frequency (4 items; McAllister, 1995) over the last 6 months.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

Multiple Regression analyses testing the relation between interaction frequency (controlling for relative amount of digital contact with the leader, as we expect the frequency and not the means of contact to predict the outcomes) and perceived task responsibility, goal clarity, or norms clarity, respectively.

We run an additional structural equation model that captures all these paths simultaneously.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

Inclusion criteria: >= 18 years old; current and continuous employment to an extent of 50% or more over the past 6 months; one or more direct supervisor/manager; answering the survey until at least the last item of the subscale interaction valence; no withdrawal of their consent to use their data at the very end. Ps not fulfilling these criteria will be excluded. We report how this impacts results.

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

*Ideal N = 196, g*power analyses with alpha .05, power 0.8, f2 = 0.05 (small-to-medium effect assumed; prior study yielded R2 around .06-.10); 2 predictors in a multiple regression analysis (interaction frequency, digital contact).*

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)

We assess and test four exploratory outcomes (over the last 6 months):

(1) Perceived leader responsibility (5 items; Scholl et al., 2017; 2018); (2) Leader trustworthiness (3 items; Winter, Scholl & Sassenberg, 2019); (3) Leader-Member-Exchange (= relational quality; 7 items; LMX7, Graen & Uhl-Bien, 1995); (4) Organizational identification (6 items) Control variables (over the last 6 months): (a) relative amount of digital contact with leader (= digital contact; 1 item, percentage; included in main analyses), (b) relative amount of virtual work (= digital work; 1 item, percentage) ; (c) appropriateness of interaction frequency; interaction intensity (2 items each); perceived interaction valence (2 items, 1-5-point scale); we explore if this influences the relation between interaction frequency and the outcomes. We also run an exploratory analysis including age, gender, tenure as control variables

Research Materials

<u>Complete List of Variables Assessed in this Study</u>

Variables are listed in the actual survey order. Variables in bold are included in the manuscript; variables not in bold were assessed for exploratory purposes; variables in blue and not in bold were assessed for a different research question not targeted in *Chapter 2*. Abbreviations in brackets are presented in Table A1. Further details regarding the measurement of variables not included in this chapter can be found in the online supplement of the published version of this chapter, available at https://doi.org/10.1371/journal.pone.0279176

- **Frequency of interaction (Freq)**
- **Digitalization of interaction (Dig)**
- **Perceived task responsibility (Resp)**
- **Goal clarity (Goal)**
- **Norm clarity (Norm)**
- Organizational identification (Ident)
- Leader-Member-Exchange (LMX)
- Perceived leader responsibility (LResp)
- Leader trustworthiness (Trust)
- Appropriateness of interaction (Appr)
- Valence of interaction (Val)

Table A1

Correlations (Cronbach's Alphas in Brackets) of All Variables in Study 2.1 (N = 200)

Variables	*M*	*SD*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Freq	4.40	1.16	(.86)										
(2) Dig	82.00	26.14	-.15*	(-)									
(3) Goal	4.72	1.41	.25***	-.01	(.84)								
(4) Norm	4.64	0.87	.17*	.03	.51***	(.75)							
(5) Resp	6.06	0.68	-.02	.05	.11	.15*	(.62)						
(6) Lresp	4.51	1.43	.36***	.02	.31***	.19**	-.02	(.92)					
(7) Trust	5.48	1.35	.41***	-.02	.32***	.18*	.02	.74***	(.88)				
(8) LMX	3.64	0.76	.44***	.11	.41***	.33***	.08	.77***	.76***	(.91)			
(9) Ident	4.73	1.23	.11	-.03	.13	.22**	.30***	.11	.12	.19**	(.87)		
(10) Val	4.04	0.95	.26***	.00	.25***	.16*	-.08	.62***	.65***	.65***	.02	(.80)	
(11) Appr	4.21	1.12	.42***	.05	.35***	.23**	.03	.46***	.45***	.54***	.12	.48***	(.63)

Note. For abbreviations of concepts, see the list of variables assessed above. For (10) Val and (11) Appr we report Pearson's r instead of Cronbach's alpha, due to both scales consisting of two items

$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Core Measures of Study 2.1

Frequency of Interaction:

Seven-point scale, anchors "once or twice in six months" (1) and "many times daily" (7)

Instructions:

Wie haben Sie in den letzten 6 Monaten mit Ihrem/r direkten Vorgesetzten zusammengearbeitet? Bitte berücksichtigen Sie hier ***jegliche Form*** *von Kontakt (persönlich, telefonisch, E-Mail, Video-Konferenz, Kurznachricht, Instant Messaging, etc.).*

[How did you collaborate with your direct supervisor in the last 6 months? Please consider all kinds of contact (face-to-face, telephone, email, video calls, short message, instant messaging, etc.]

Items:

- *Wie häufig haben Sie in diesem Zeitraum mit Ihrem/r Vorgesetzten interagiert?*
  [How frequently did you interact with your leader at work]
- *Wie häufig wurde die Interaktion von Ihrem/r Vorgesetzten angestoßen?*
  [How frequently did your leader initiate work-related interaction with you]
- *Wie häufig wurde die Interaktion von Ihnen angestoßen?*
  [How frequently did you initiate work-related interaction with your leader]
- *Wie häufig hatten Sie informellen oder sozialen Kontakt mit Ihrem/r Vorgesetzten?*
  [How frequently did you interact with your leader informally or socially at work]

Digitalization of Interaction:

Instructions:

Zunächst interessiert uns, wie Sie Ihre Arbeit ***in den letzten 6 Monaten*** *gestaltet und erlebt haben. Welchen Anteil Ihrer wöchentlichen Arbeitszeit haben Sie in diesem Zeitraum* ***nicht an Ihrem Büroarbeitsplatz*** *- also stattdessen z.B. virtuell bzw. mobil im Home-Office - gearbeitet?*

[First of all, we are interested in how you have organized and experienced your work in the last 6 months.

What proportion of your weekly working time did you spend away from your office desk during this period - e.g., working virtually or on the move in your home office instead?]

Items:

- Percent slider (0-100%)

Goal Clarity:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

Instructions:

Nun geht es darum, wie Sie selbst Ihre Arbeit ***in den letzten 6 Monaten*** *erlebt haben. Wie sehr stimmen Sie den folgenden Aussagen zu?*

[The following questions concern how you have experienced your work in the last 6 months. How much do you agree with the following statements?]

Items:

- *Bei meiner Arbeit sind die Ziele generell schlecht beschrieben.*
  [In my job, in general, goals are poorly described.]
- *Bei meiner Arbeit sind die meisten Ziele unkonkret*
  [In my job, most goals are vague.]
- *Bei meiner Arbeit sind die meisten Ziele einigermaßen klar*
  [In my job, most goals are reasonably clear.]
- *Bei meiner Arbeit sind die Aufgaben, die mein/e Vorgesetzte/r mir gibt, mit langfristigen Zielen verbunden*
  [In my job, the tasks that my leader gives me are linked to long range goals.]

Norm Clarity:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

Instructions:

Nun geht es darum, wie Sie selbst Ihre Arbeit ***in den letzten 6 Monaten*** *erlebt haben. Wie sehr stimmen Sie den folgenden Aussagen zu?*

[The following questions concern how you have experienced your work in the last 6 months. How much do you agree with the following statements?]

Items:

- *In meinem Team sind wir uns einig darüber, wie Dinge getan werden sollten.*
  [In my team, we agree about how things should be done.]
- *In meinem Team wählen alle die gleiche Vorgehensweise, wenn wir dieselbe Aufgabe ausführen.*
  [In my team, we apply the same approach when performing the same work task.]
- *In meinem Team wird von uns erwartet, die gleiche Vorgehensweise zu wählen, wenn wir dieselbe Aufgabe ausführen.*
  [In my team, we are expected to apply the same procedure when doing the same task.]

- *In meinem Team ändern sich die Vorgehensweisen und Regeln, wie Dinge getan werden sollen, häufig.*
  [In my team, procedures and rules how to do things frequently change.]
- *Wenn ich/wir an einer Aufgabe arbeite/n kenne ich die Erwartungen hinsichtlich der Strategien, die ich anwenden sollte.*
  [When working on a task, I know the expectations regarding the strategies I should apply.]
- *Wenn ich/wir an einer Aufgabe arbeite/n sind die Regeln und Normen, die eine Aufgabe betreffen, klar.*
  [When working on a task, rules and norms regarding my task are clear to me.]
- *Wenn ich/wir an einer Aufgabe arbeite/n folge ich immer den Vorgehensweisen, deren Anwendung erwartet wird.*
  [When working on a task, I always follow the procedures that I am expected to apply.]
- *Wenn ich/wir an einer Aufgabe arbeite/n wählen wir als Team immer die Vorgehensweisen, die unser/e Vorgesetzte/r bevorzugt.*
  [When working on a task, we, as a team, use the procedures preferred by our leader.]

Perceived Task Responsibility:
Seven-point scale, anchors "strongly disagree" (1) and "strongly agree" (7)

Instructions:
Wie sehr stimmen Sie generell den folgenden Aussagen zu?
[To what extent do you agree with the following statements?]

Items:

- *Ich fühle mich in hohem Maße verantwortlich für die Aufgaben, die mit meiner Arbeit zusammenhängen.*
  [I feel a great deal of responsibility for the tasks related to my work.]
- *Ich sehe es als meine Verpflichtung, meine Arbeit so gut wie möglich auszuführen.*
  [I see it as a duty to make my job as good as possible.]
- *Ich denke immer darüber nach, wie sich meine Handlungen auf die Ziele meiner Organisation auswirken.*
  [I am always thinking about how my actions will affect the organization's goals.]
- *Ich fühle mich persönlich verantwortlich, wenn etwas bei der Arbeit schiefläuft.*
  [I feel personally accountable if something goes wrong at work.]

- *Ich bin für gewöhnlich besorgt über den Fortschritt der Projekte, an denen ich arbeite.*
  [I am usually concerned about the progress of the projects I am involved in.]

Valence of Interaction:

Seven-point scale, anchors "negative/unpleasant" (1) and "positive/pleasant" (7)

Instructions:

Nun geht es noch einmal um Ihrem ***Kontakt*** *zu Ihrem/r Vorgesetzten* ***in den letzten 6 Monaten*** *und wie Sie diesen* ***erlebt*** *haben.*

[The following statements again concern your contact with your supervisor(s) in the last 6 months and how you experienced it.]

Items:

- *Wie haben Sie den Austausch an sich erlebt?*
  [How did you perceive the contact by itself?]
- *Wie haben Sie die Kontaktatmosphäre empfunden?*
  [How did you perceive the atmosphere of the contact?]

Appropriateness of Interaction:

Seven-point scale, anchors "too low" (1) and "too high" (7)

Instructions:

Nun geht es noch einmal um Ihrem ***Kontakt*** *zu Ihrem/r Vorgesetzten* ***in den letzten 6 Monaten*** *und wie Sie diesen* ***erlebt*** *haben.*

[The following statements again concern your contact with your supervisor(s) in the last 6 months and how you experienced it.]

Items:

- *Wie haben Sie die Kontakthäufigkeit erlebt?*
  [How did you perceive the frequency of contact?]
- *Wie haben Sie die Intensität (z.B. Dauer, Ausführlichkeit) des Kontakts erlebt?*
  [How did you perceive the intensity (e.g., duration, detailedness) of contact]

Additional Analyses

Exploratory moderation analyses via PROCESS (version 3.5, Hayes, 2018; Model 1) tested whether the relationship between frequency of interaction (entered as predictor) and each of the leadership outcomes (outcomes) is moderated by followers' perceived valence and appropriateness of the interaction (moderators), respectively.

The *valence of interaction* did moderate the relationship between frequency of interaction and norm clarity (b = 0.12, SE = 0.06, p = .031) In case of a more positive valence of interaction (+1 SD), frequency of interaction and norm clarity were positively related (b = 0.22, SE = 0.08, p = .004), whereas they were unrelated in case of a less positive valence of interaction (-1 SD, b = -0.02, SE = 0.08, p = .829*)*. However, valence of interaction neither moderated the relationship between frequency and goal clarity (b = 0.09, SE = 0.09, p = .309) nor between frequency and perceived task responsibility (b = -0.03, SE = 0.04, p = .571).

Similarly, the *appropriateness of interaction* neither moderated the relationship of frequency with goal clarity (b = 0.00, SE = 0.08, p = .992), nor norm clarity (b = 0.05, SE = 0.05, p = .328), nor perceived task responsibility (b = -0.02, SE = 0.04, p = .583).

Accordingly, in sum, the relationship between frequency of interaction and the task-related outcomes did (with one exception with a borderline p-value) *not* depend on whether followers perceived the interaction as (not) positively valenced or the frequency as (not) appropriate. Due to the exploratory nature of these analyses, these results need to be interpreted with caution.

Additional Information for Study 2.2

Research Materials Study 2.2

<u>Original Focus of the Study</u>

The initial purpose of the study was to test whether the frequency of interaction between leader and subordinates moderates the relationship between organizational guidance (i.e., transformational leadership, goal clarity, norm clarity, and subordinates' perceived task responsibility) and leadership outcomes (i.e., autonomous motivation and perceived leadership effectiveness). Unexpectedly high correlations of *transformational leadership* with all other variables, however, precluded us from performing these analyses (see Table A2). For that reason, we decided to continue with another, exploratory approach as presented in the paper that targets the outcomes of frequency of interaction.

<u>Complete List of Variables Assessed in this Study</u>

Variables are listed in the actual survey order.Variables in bold are included in the manuscript; variables in blue and not in bold were assessed for a different research question not targeted in *Chapter 2*. Variables in black and not in bold represent variables related to leadership and were assessed for the initial purpose of the study but are not included in *Chapter 2*. Further details regarding the measurement of variables not included in this chapter can be found in the online supplement of the published version of this chapter, available at https://doi.org/10.1371/journal.pone.0279176

- Social Identification with the organization
- Excellence norms in the organization
- Threat/challenge/hindrance appraisal of excellence norms
- External motivation to perform well
- Autonomous motivation (Amot)
- Social support from colleagues
- Transformational leadership (TFL)
- **Goal Clarity (Goal)**
- **Norm clarity (Norm)**
- **Responsibility (Resp)**
- Leader effectiveness (Effect)
- **Frequency of Interaction (Freq)**
- **Digitalization of Interaction (Dig)**
- Workload
- Personal striving for excellence
- Self-efficacy
- Self-reported work performance
- Well-being
- Stress symptoms
- Emotional Exhaustion
- Number of sick days
- Resentment
- Trait negative affect

Table A2

Correlations (Cronbach's Alphas in Brackets) of all Variables Initially Intended to Test in Study 2.2 (N = 305)

Variable	*M*	*SD*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Time 1																		
(1) Freq	5.31	1.24	(.79)															
(2) Dig	3.24	1.81	-.39***	(.67)														
(3) Goal	4.72	1.36	.29***	-.08	(.86)													
(4) Norm	5.15	0.83	.29***	-.14**	.58***	(.81)												
(5) Resp	5.44	1.01	.22***	.02	.36***	.35***	(.81)											
(6) TFL	3.66	0.99	.52***	-.10*	.59***	.47***	.35***	(.94)										
(7) Amot	3.65	0.72	.21***	-.00	.29***	.30***	.55***	.40***	(.91)									
(8) Effect	5.13	1.64	.61***	-.12*	.51***	.39***	.27***	.86***	.27***	(.97)								
Time 2																		
(9) Freq	6.06	0.96	.71***	-.36***	.22***	.30***	.26***	.45***	.24***	.47***	(.71)							
(10) Dig	2.99	1.48	-.31***	.70***	-.03	-.14*	-.02	-.07	.03	-.08	-.36***	(.70)						
(11) Goal	4.86	1.33	.32***	-.10	.66***	.50***	.30***	.48***	.28***	.43***	.24***	-.02	(.87)					
(12) Norm	5.17	0.86	.34***	-.17**	.41***	.64***	.24***	.42***	.27***	.38***	.37***	-.07	.61***	(.83)				
(13) Resp	5.47	0.98	.30***	-.02	.27***	.31***	.69***	.29***	.49***	.24***	.27***	.08	.36***	.40***	(.82)			
(14) TFL	3.72	0.99	.40***	-.05	.47***	.37***	.32***	.73***	.39***	.66***	.47***	.03	.55***	.52***	.39***	(.95)		
(15) Amot	3.58	0.74	.24***	-.04	.25***	.24***	.42***	.33***	.78***	.21***	.25***	.05	.31***	.32***	.50***	.40***	(.92)	
(16) Effect	5.20	1.56	.45***	-.09	.42***	.33***	.21***	.70***	.28***	.72***	.53***	-.05	.49***	.49***	.28***	.87***	.27***	(.97)

Note. Resp = followers' perceived task responsibility; TFL = Transformational Leadership Behavior; Amot = autonomous motivation; Effect = leader effectiveness

$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

<u>Core Measures of Study 2.2</u>

Frequency of Interaction:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

<u>Items</u>:

- *How often do you interact with your leader?* [anchors “several times a day” (1) and “once a year or less (8)]
- *My leader responds quickly to my questions.*
- *In general, I interact with my leader often.*
- *I often have informal interactions with my leader, i.e., interactions that are not scheduled.*

Digitalization of Interaction:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

<u>Items</u>:

- *My leader and I mostly interact using media (e.g., telephone, email) rather than face-to-face.*
- *When I have a question to my leader, I write that question per email instead of asking him the question in person*
- *Which proportion of your working hours do you work from home?* [percent slider]

Goal Clarity:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

<u>Items</u>:

- *In my job, in general, goals are poorly described.*
- *In my job, most goals are vague.*
- *In my job, most goals are reasonably clear.*
- *In my job, the tasks that my leader gives me are linked to long range goals.*

Norm Clarity:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

<u>Items</u>:

- *In my team, we agree about how things should be done.*
- *In my team, we apply the same approach when performing the same work task.*

- *In my team, we are expected to apply the same procedure when doing the same task.*
- *In my team, procedures and rules how to do things frequently change.*
- *When working on a task, I know the expectations regarding the strategies I should apply.*
- *When working on a task, rules and norms regarding my task are clear to me.*
- *When working on a task, I always follow the procedures that I am expected to apply.*
- *When working on a task, we, as a team, use the procedures preferred by our leader.*

Perceived Task Responsibility:

Seven-point scale, anchors "strongly disagree" (1) and "strongly agree" (7)

Items:

- *I feel a great deal of responsibility for the tasks related to my work.*
- *I see it as a duty to make my job as good as possible.*
- *I am always thinking about how my actions will affect the organization's goals.*
- *I feel personally accountable if something goes wrong at work.*
- *I am usually concerned about the progress of the projects I am involved in.*

Additional Information for Study 2.3

Pre-Registration

Created:	07/19/2021 12:05 AM (PT)
Made public:	12/06/2022 01:42 AM (PT)
Available at:	https://aspredicted.org/eh8vd.pdf

1) Have any data been collected for this study already?

No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?

RQ: Does frequency of interaction between leader and follower (controlling for digitalization of interaction) predict higher follower goal clarity, norm clarity, and task responsibility?

H1: High (vs. low) frequency of interaction between leader and follower leads to more follower goal clarity.

H2: High (vs. low) frequency of interaction between leader and follower leads to more follower norm clarity.

H3: High (vs. low) frequency of interaction between leader and follower leads to more follower perceived task responsibility.

3) Describe the key dependent variable(s) specifying how they will be measured.

DV1: Goal clarity (4 items; adapted from Burman et al., 2014)

DV2: Norm clarity (3 items; self-developed)

DV3: Perceived task responsibility (5 items; adapted from Schaumberg & Flynn, 2012)

4) How many and which conditions will participants be assigned to?

Participants will be assigned to two conditions: high vs. low frequency

1) Situation/time in which participants had rare contact with their leader

2) Situation/time in which participants had highly frequent contact with their leader

To enhance the manipulation, participants think about both situations and answer a few questions regarding the frequency and means of contact in these situations, respectively

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

3 ANCOVAs testing for the effect of high vs. low frequency (covariate digitalization of contact, see 8) on the three outcomes, respectively

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

Data will be checked for outliers on outcomes using studentized deleted residuals (SDR) from a multiple regression of outcomes on the predictor. Participants with an absolute SDR > |2.59| will be excluded, following our standard lab protocol.

Inclusion criteria:

- >= 3 years of work experience

- employment to an extent of at least 50%

- manipulation check

- attention check

The first two criteria will be checked at the beginning of the survey; participants who do not pass the manipulation check and/or attention check will be excluded.

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

*Ideal N = 256, g*power analysis (ANCOVA) with alpha .05, power 0.8, f2 = 0.03; 2 groups (high vs. low frequency) with 1 covariate (digitalization of interaction)*

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)

Control variable: Digitalization of interaction (3 items; self-developed, 1-7-point scale)

Additional measures: Work-related information sharing (3 items; self-developed, 1-7-point scale) we explore how it is affected by frequency and relates to the outcome measures; team norm clarity (4 items; self-developed, 1-7-point scale), we explore if it produces the same effects as the norm clarity scale (see main DV)

Exploratory measures: LMX, leader charisma, leader-follower-personal information sharing; we run an exploratory analysis to see if frequency of interaction as predictor affects leaders' perceived charisma (5 items) and LMX (6 items) via leader-follower personal information sharing (3 items)

We also assess the share of virtual work (1 item, percentage) under the respective leader – control variable; perceived interaction valence (2 items) with the respective leader (possible moderator); the medium mainly used by leader and follower when not interacting face-to-face; followers' perceived interactivity of this medium (6 items); age, gender, work hours, and own leadership position

Research Materials

Complete List of Variables Assessed in this Study

Variables are listed in the actual survey order.Variables in bold are included in the manuscript; variables not in bold were assessed for exploratory purposes; variables in blue and not in bold were assessed for a different research question not targeted in *Chapter 2*. Abbreviations in brackets are presented in Table A3. Further details regarding the measurement of variables not included in this chapter can be found in the online supplement of the published version of this chapter, available at https://doi.org/10.1371/journal.pone.0279176

- **Digitalization of interaction (Dig)**
- **Goal clarity (Goal)**
- **Norm clarity (Norm)**
- **Perceived task responsibility (Resp)**
- **Work-related information sharing (Work)**
- Frequency of interaction (Freq)

- Valence of interaction (Val)
- Followers' perceived interactivity of digital medium (Inter)
- Leader-Member-Exchange (LMX)
- Perceived leader charisma (Char)
- Personal information sharing (Pers)
- Team norm clarity (TNorm)

Table A3

Correlations (Cronbach's Alphas in Brackets) of All Variables in Study 2.3 (N = 178)

Variables	*M*	*SD*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Dig	4.37	1.96	(.92)											
(2) Goal	5.04	1.27	.12	(.79)										
(3) Norm	5.32	1.13	-.05	.57***	(.74)									
(4) Resp	5.70	0.87	.02	.30***	.42***	(.73)								
(5) Work	5.31	1.49	-.17*	.58***	.55***	.39***	(.91)							
(6) Freq	4.60	1.24	-.26***	.27***	.36***	.26**	.48***	(.80)						
(7) Val	5.06	1.48	-.11	.60***	.53***	.40***	.70***	.44***	(.91)					
(8) LMX	3.45	0.82	-.08	.61***	.57***	.35***	.70***	.55***	.81***	(.86)				
(9) Char	4.68	1.44	.04	.52***	.52***	.43***	.55***	.34***	.77***	.77***	(.90)			
(10) Pers	3.66	1.89	-.06	.33***	.39***	.38***	.46***	.43***	.59***	.58***	.55***	(.92)		
(11) TNorm	4.80	1.13	.06	.41***	.45***	.24**	.43***	.42***	.58***	.62***	.58***	.40***	(.63)	
(12) Inter	5.12	0.94	.24**	.39***	.34***	.27***	.39***	.28***	.43***	.39***	.42***	.27***	.50***	(.71)

Note. For abbreviations of concepts, see the list of variables assessed above. For (7) Val we report Pearson's r instead of Cronbach's alpha, due to the scale consisting of two items.

* $p < .05$. ** $p < .01$. *** $p < .001$.

<u>Inducing High vs. Low Recalled Frequency of Interaction</u>

High Recalled Frequency:

Please think about your current work or your work in the past - and a leader you are working with or have worked with.

Typically, there are times when you have a lot of contact with your leader (e.g., at least once a week), and there are equally times in which your have rare contact with your leader (e.g., once a month or less).

Please think about two such times where you have (had) (1) more and (2) less frequent contact with your leader, respectively.

During the time when you had <u>rarely</u> contact with your leader:

How often and by which means did you have contact? (e.g., face-to-face, email, etc.)

During the time when had <u>frequent</u> had contact with your leader:
How often and by which means did you have contact? (e.g., face-to-face, email, etc.)

Please answer all questions below with reference to the time when you had <u>frequent</u> had contact with your leader.

Low Recalled Frequency:

Please think about your current work or your work in the past - and a leader you are working with or have worked with.
Typically, there are times when you have a lot of contact with your leader (e.g., at least once a week), and there are equally times in which your have rare contact with your leader (e.g., once a month or less).
Please think about two such times where you have (had) (1) more and (2) less frequent contact with your leader, respectively.
During the time when you had <u>frequent</u> contact with your leader:
How often and by which means did you have contact? (e.g., face-to-face, email, etc.)

During the time when you <u>rarely</u> had contact with your leader:
How often and by which means did you have contact? (e.g., face-to-face, email, etc.)

Please answer all questions below with reference to the time when you <u>rarely</u> had contact with your leader.

<u>Core Measures of Study 2.3</u>

Digitalization of Interaction:
Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

<u>Instruction</u>:
Please indicate by which means you and your leader had contact during that time.

<u>Items</u>:

- *My leader and I mostly exchanged questions digitally instead of asking each other in person.*
- *My leader and I mostly interacted using media (e.g., phone, email) rather than talking face-to-face.*

- *To what extent did the contact during that time occur digitally or via telephone, but not face-to-face? Please consider every form of digital contact (e.g., email, video chat, etc.)* [Percent slider]

Goal Clarity:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

Instruction:

Please indicate the extent to which the following statements apply to you.

Working with my leader ***during this time****, in my job...*

Items*:*

- *... goals were poorly described.*
- *... most goals were vague.*
- *... most goals were reasonably clear.*
- *... the tasks that my leader gave me were linked to long range goals.*

Norm Clarity:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

Instruction:

Please indicate the extent to which the following statements apply to you.

When working on a task with / for my leader ***during this time****, ...*

Items:

- *... I knew the expectations regarding the strategies I should apply.*
- *... I was always aware of the procedures that I was expected to apply.*
- *... I used the procedures preferred by this leader.*

Perceived Task Responsibility:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

Instruction:

Please indicate the extent to which the following statements apply to you.

At that specific time*, working for / with my leader, ...*

Items:

- *... I felt a great deal of responsibility for the tasks related to my work.*
- *... I saw it as a duty to make my job as good as possible.*

- *... I was always thinking about how my actions will affect the organizations goals.*
- *... I felt personally accountable if something went wrong at work.*
- *... I was usually concerned about the progress of the projects I was involved in.*

Work-Related Information Sharing:

Seven-point scale, anchors “once or twice in six months” (1) and “many times daily” (7)

<u>Instruction</u>:

How did you experience collaborating with your leader during this time when you had rare/frequent [depending on condition] *contact?*

<u>Items</u>:

- *During this time, I experienced that my leader and I made use of opportunities to keep each other informed about work matters.*
- *During this time, I experienced that my leader and I had the chance to approach each other regarding work-related issues.*
- *During this time, I experienced that my leader and I were able to clarify task-related questions with each other.*

Frequency of Interaction:

Seven-point scale, anchors “once or twice in six months” (1) and “many times daily” (7)

<u>Instruction</u>:

How often did you have contact with your leader ***during this time?***

<u>Items</u>:

- *How frequently did this leader initiate work-related contact with you?*
- *How frequently did you initiate work-related contact with this leader?*
- *How frequently did you interact with this leader at work?*
- *How frequently did you interact with this leader informally or socially at work?*

Valence of Interaction:

Seven-point scale, anchors “extremely negative” (1) and “extremely positive” (7)

<u>Instruction</u>:

How did you ***perceive the contact*** *with your leader during that time?*

Items:

- *How did you perceive the contact with your leader during that time?*
- *How did you perceive the atmosphere of the contact during that time?*

Additional Analyses Study 2.3

Valence of Interaction

As in Study 2.1, we explored whether the effects of frequency on the outcomes are moderated by followers' perceived valence of the interaction via PROCESS (model 1, Hayes, 2020). As in Study 2.1, the valence of interaction moderated the relationship between frequency and norm clarity in case of a more positive valence (+ 1 *SD*, $b = 0.52$, $SE = 0.23$, $p = .024$), whereas frequency and norm clarity were unrelated in case of a less positive valence of interaction (-1 *SD,* $b = -0.19$, $SE = 0.22$, $p = .384$). However, valence of interaction neither moderated the relationship between frequency and goal clarity ($b = 0.18$, $SE = 0.11$, $p = .105$) nor between frequency and perceived task responsibility ($b = 0.13$, $SE = 0.09$, $p = .157$).

Accordingly, as in Study 2.1, except for norm clarity, the relations between frequency and the task-related outcomes were not influenced by whether followers perceived the interaction as negatively or positively valenced. Again, since these results are exploratory, they need confirmatory testing.

Type of Digital Medium

In three additional ANOVAs, we explored whether the type of digital medium used when communicating digitally produces effects on the outcome variables goal clarity, norm clarity, and perceived task responsibility. We considered "email", "messenger", "video chat", "telephone" and "other". However, different types of media did not differ regarding goal clarity, $F(4, 173) = 0.57$, $p = .683$, nor norm clarity, $F(4, 173) = 1.54$, $p = .194$, nor perceived task responsibility, $F(4, 173) = 0.39$, $p = .819$.

Furthermore, we explored whether the type of digital medium would moderate the relation between digitalization and the outcomes via PROCESS (model 1, Hayes, 2020). The type of digital medium neither moderated the relationship between digitalization and goal clarity ($b = 0.04$, $SE = 0.03$, $p = .257$), nor norm clarity ($b = 0.00$, $SE = 0.03$, $p = .982$), nor perceived task responsibility ($b = 0.03$, $SE = 0.02$, $p = .215$).

Additional Information for Study 2.4

Pre-Registration

Created:	09/27/2021 06:54 AM (PT)
Made public:	12/06/2022 01:45 AM (PT)
Available at:	https://aspredicted.org/ea3aq.pdf

1) Have any data been collected for this study already?

No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?

RQ: Does work-related information sharing between leader and follower predict higher follower goal clarity, norm clarity, and perceived task responsibility?

H1: High (vs. low) work-related information sharing between leader and follower leads to (a) more follower goal clarity, (b) more follower norm clarity, and (c) more follower perceived task responsibility.

3) Describe the key dependent variable(s) specifying how they will be measured.

DV1: Goal clarity (4 items; adapted from Burman et al., 2014)

DV2: Norm clarity (3 items; self-developed)

DV3: Perceived task responsibility (5 items; adapted from Schaumberg & Flynn, 2012)

4) How many and which conditions will participants be assigned to?

Two between-participants conditions: high vs. low work-related information sharing; participants (followers) will be asked to think about….

1) a time in which they talked a lot about their tasks or job in general in conversations with their leader

2) a time in which they talked very little about their tasks or job in general in conversations with their leader

To enhance the manipulation, participants first briefly think about and write down a few notes about both situations (topics in these situations), they are then asked to focus only on one of these situations and answer the DVs with respect to that time with high (vs. low) work-related info sharing

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

1 MANOVA testing for the effect of high vs. low information sharing on the three outcomes. 3 follow-up ANOVAs for simple comparison testing for the effect of high vs. low information sharing on the three outcomes, respectively.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

Data will be checked for outliers on all three outcomes using studentized deleted residuals (SDR) from a multiple regression of the three outcomes on thepredictor work-related info sharing. Participants with an absolute SDR > |2.59| will be excluded, following our standard lab protocol.

Inclusion criteria:

- >= 3 years of work experience

- employment to an extent of at least 50%

- age >= 20 years

- followed instruction regarding the manipulation (did they think a about a time with high or low work-related info sharing; 1 item)

- attention check passed (1 item)

The three criteria will be checked at the beginning of the survey; the two checks will be checked at the end of the survey; participants who do not pass the two checks and/or do not fulfill these criteria will be excluded.

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

*Ideal N = 260, g*power analysis (ANOVA) with alpha .05, power 0.8, f2 = 0.03; 2 groups (high vs. low information sharing); we aim to collect N = 300 participants to compensate for potential dropouts The g*power analysis is based on the follow-up ANOVAs, because these analyses require more participants than the MANOVA.*

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)

Additional measures for exploratory purposes : Frequency of interaction (4 items; adapted from McAllister, 1995, 1-7-point scale), digitalization of interaction (3 items; self-developed, 1-7-point scale), and work-related information sharing (3 items; self-developed, 1-7 point scale)

We also assess age, gender, work hours, organizational tenure, own leadership position, and industry sector.

Research Materials

Complete List of Variables Assessed in this Study

Variables are listed in the actual survey order.Variables in bold are included in the manuscript; variables not in bold were assessed for exploratory purposes. Abbreviations in brackets are presented in Table A4.

- **Goal clarity (Goal)**
- **Norm clarity (Norm)**
- **Perceived task responsibility (Resp)**
- Digitalization of interaction (Dig)
- Frequency of interaction (Freq)
- Work-related information sharing (Work)

Table A4

Correlations (Cronbach's alphas in brackets) of All Variables in Study 2.4 (N = 261)

Variables	*M*	*SD*	(1)	(2)	(3)	(4)	(5)	(6)
(1) Goal	4.84	1.43	(.84)					
(2) Norm	5.30	1.24	$.63^{***}$	(.81)				
(3) Resp	5.64	0.99	$.33^{***}$	$.43^{***}$	(.81)			
(4) Dig	3.85	1.93	.03	-.02	-.04	(.89)		
(5) Freq	4.42	1.21	$.25^{***}$	$.25^{***}$	$.17^{**}$	$-.34^{***}$	(.81)	
(6) Work	5.37	1.22	$.56^{***}$	$.59^{***}$	$.43^{***}$	-.01	$.37^{***}$	(.88)

Note. For abbreviations of concepts, see the list of variables assessed above

$^{*}p < .05$. $^{**}p <.01$. $^{***}p < .001$.

Inducing High vs. Low Recalled Work-Related Information Sharing

High Recalled Work-Related Information Sharing:

Please think about your current work or your work in the past - and a leader you are working with or have worked with.

Typically, there are times when you and your leader talk a lot about your tasks or your job in general (i.e., in almost all your conversations) - and there are equally times when you and your leader talk very little about your job / tasks but the focus of the conversation is on the team, the company more generally or unrelated to work.

Please think about two such times in which the (digital or personal) contact between you and your leader involved your job / tasks (1) a lot and (2) very little, respectively.

During the time when you talked <u>very little</u> about your job / tasks in conversations with your leader:
What topics did you talk about?

During the time when you talked <u>a lot</u> about your job / tasks in conversations with your leader:
What topics did you talk about?

Please answer all questions below with reference to the latter time – when you talked <u>a lot</u> about your job / tasks in conversations with your leader.

Low Recalled Work-Related Information Sharing:

Please think about your current work or your work in the past - and a leader you are working with or have worked with.
Typically, there are times when you and your leader talk a lot about your tasks or your job in general (i.e., in almost all your conversations) - and there are equally times when you and your leader talk very little about your job / tasks but the focus of the conversation is on the team, the company more generally or unrelated to work.
Please think about two such times in which the (digital or personal) contact between you and your leader involved your job / tasks (1) a lot and (2) very little, respectively.

During the time when you talked <u>a lot</u> about your job / tasks in conversations with your leader:
What topics did you talk about?

During the time when you talked <u>very little</u> about your job / tasks in conversations with your leader:
What topics did you talk about?

Please answer all questions below with reference to the latter time – when you talked <u>very little</u> about your job / tasks in conversations with your leader.

Core Measures of Study 2.4

Goal Clarity:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

Instruction:

Please indicate the extent to which the following statements apply to you.

*Working with my leader **during this time**, in my job...*

Items:

- *... goals were poorly described.*
- *... most goals were vague.*
- *... most goals were reasonably clear.*
- *... the tasks that my leader gave me were linked to long range goals.*

Norm Clarity:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

Instruction:

Please indicate the extent to which the following statements apply to you.

*When working on a task with / for my leader **during this time**, ...*

Items:

- *... I knew the expectations regarding the strategies I should apply.*
- *... I was always aware of the procedures that I was expected to apply.*
- *... I used the procedures preferred by this leader.*

Perceived Task Responsibility:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

Instruction:

Please indicate the extent to which the following statements apply to you.

***At that specific time**, working for / with my leader, ...*

Items:

- *... I felt a great deal of responsibility for the tasks related to my work.*
- *... I saw it as a duty to make my job as good as possible.*
- *... I was always thinking about how my actions will affect the organizations goals.*

- *... I felt personally accountable if something went wrong at work.*
- *... I was usually concerned about the progress of the projects I was involved in.*

Frequency of Interaction:

Seven-point scale, anchors “once or twice in six months” (1) and “many times daily” (7)

Instruction:

How often did you have contact with your leader ***during this time?***

Items:

- *How frequently did this leader initiate work-related contact with you?*
- *How frequently did you initiate work-related contact with this leader?*
- *How frequently did you interact with this leader at work?*
- *How frequently did you interact with this leader informally or socially at work?*

Digitalization of Interaction:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

Instruction:

Please indicate by which means you and your leader had contact during that time.

Items:

- *My leader and I mostly exchanged questions digitally instead of asking each other in person.*
- *My leader and I mostly interacted using media (e.g., phone, email) rather than talking face-to-face.*
- *To what extent did the contact during that time occur digitally or via telephone, but not face-to-face? Please consider every form of digital contact (e.g., email, video chat, etc.)* [Percent slider]

Appendix B – Additional Information for Chapter 3

Additional Information for Study 3.1

Research Materials

Original Focus of the Study

The initial purpose of the study was to test whether followers' perceived leader opportunity (controlling for perceived leader responsibility) predicts more follower engagement (see *Chapter 4*). The frequency and digitalization of interaction that constitute the predictors in Study 3.1 were assessed as exploratory variables in this study.

Complete List of Variables Assessed in this Study

Variables are listed in the actual survey order.Variables in bold are core measures in *Chapter 3*; variables not in bold were assessed for a different research question not targeted in this chapter. Measurement of core measures is shown below.

- **Perceived leader opportunity**
- **Perceived leader responsibility**
- Follower effort (10 items; De Cooman et al., 2009)
- Follower innovative work behavior (9 items; Janssen, 2000)
- Follower well-being (10 items; Tambs, 2004)
- **Frequency of interaction**
- **Digitalization of interaction**

Core Measures of Study 3.1

Perceived Leader Opportunity:

Seven-point scale, anchors "strongly disagree" (1) and "strongly agree" (7)

Instruction:

When people have a supervisor, manager, or leadership role, they often make important decisions, evaluate the performance of others, and work on projects with their employees (e.g., team members, etc.).

The following questions focus on your impression of how your supervisor ***understands his or her position*** *in working with subordinates. In case you are reporting to several people, please respond to the questions on this page and the following pages regarding the person who is* ***evaluating your performance.***

*How do you feel that the following applies to your leader **when collaborating with others**?*

Items:

- *My leader enjoys when his/her subordinates follow his/her guidance.*
- *My leader cares about being in full control about what he/she does.*
- *My leader feels that he/she can follow his/her own ideas.*
- *My leader feels that he/she is in control.*
- *The things my leader does are directed by his/her free will.*

Perceived Leader Responsibility:

Seven-point scale, anchors "strongly disagree" (1) and "strongly agree" (7)

Instruction:

When people have a supervisor, manager, or leadership role, they often make important decisions, evaluate the performance of others, and work on projects with their employees (e.g., team members, etc.).

*The following questions focus on your impression of how your supervisor **understands his or her position** in working with subordinates. In case you are reporting to several people, please respond to the questions on this page and the following pages regarding the person who is **evaluating your performance.***

*How do you feel that the following applies to your leader **when collaborating with others**?*

Items:

- *My leader is always concerned about how his/her actions will impact others.*
- *My leader feels a great deal of responsibility for the people he/she works with.*
- *My leader feels the duty to make sure that nobody is stressed at work.*
- *My leader feels that he/she needs to take care of other people's needs.*
- *My leader feels responsible for other people's situation.*

Frequency of Interaction:

Seven-point scale, anchors "once or twice in six months" (1) and "many times daily" (7)

Instruction:

Finally, we are interested in the way you are interacting with your leader. Please think about your collaboration with your leader and answer the questions below.

Items:

- *How frequently do you interact with your leader at work?*
- *How frequently does your leader initiate work-related interaction with you?*
- *How frequently do you initiate work-related interaction with your leader?*

Digitalization of Interaction:

Seven-point scale, anchors “strongly disagree” (1) to “strongly agree” (7)

Instruction:

Finally, we are interested in the way you are interacting with your leader. Please think about your collaboration with your leader and answer the questions below.

Items:

- *My leader and I mostly exchange questions digitally instead of asking each other in person.*
- *My leader and I mostly interact using media (e.g., phone, email) rather than talking face-to-face.*
- *To what extent did the contact occur digitally or via telephone, but not face to face?* (Percent slider)

Additional Information for Study 3.2

Pre-Registration

Created:	10/26/2022 06:59 AM (PT)
Made public:	Will be made publicly available after publication
Available at:	https://aspredicted.org/3S5_3L3 (anonymized for peer review)

1) Have any data been collected for this study already?

No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?

RQ: How do the digitalization of interaction and frequency of interaction between leader and follower at time 1 (t1) relate to leader's construal of power
(as perceived by followers) at a later point in time (t2)?

H1: The higher digitalization of interaction between leader and follower (t1), the lower will be leader's opportunity (t2).

H2: The higher the frequency of interaction between leader and follower (t1), the higher will be leader's opportunity (t2).

H3: The higher the frequency of interaction between leader and follower (t1), the higher will be leaders' responsibility (t2).

3) Describe the key dependent variable(s) specifying how they will be measured.

DV1: Leader's opportunity, as perceived by followers (5 items, self-developed)

DV2: Leader's responsibility, as perceived by followers (5 items, self-developed)

4) How many and which conditions will participants be assigned to?

No experimental conditions.

Predictors: Frequency of interaction at t1 (3 items, adapted from McAllister, 1995), Digitalization of interaction at t1 (3 items, self-developed)

Control variables: Leader's opportunity at t1, leader's responsibility at t1

Given that this is a 2-wave longitudinal study, both measures are taken at the first and the second measurement occasion (approximately 12 weeks apart).

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

2 multiple regression analyses predicting leader's opportunity and responsibility at t2 from frequency of interaction, digitalization of interaction, and the respective outcome, all at t1.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

Inclusion criteria:

- having a direct supervisor at work

- employment to an extent of at least 21 hours/week

- speaking English fluently

- attention check passed (1 item)

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

*Ideal N=216, g*power analysis (multiple regression analysis) with alpha .05, power 0.8, f2=0.049 (effect size determined based on previous studies); 3 predictors (digitalization of interaction at t1, frequency of interaction at t1, construal of power [control] at t1).*

We aim to collect N = 600 participants to compensate for exclusions and attrition between t1 and t2.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)

For exploratory purposes, we also assess follower effort (10 items, De Cooman et al., 2019), follower innovative work behavior (9 items, Janssen, 2000), and followers regulatory mode (24 items, RQM; Kruglansky et al., 2000) to test whether locomotion (controlling for assessment) moderates the relationship between leader opportunity and follower effort and innovative work behavior.

Finally, we assess age, gender, work hours, duration of collaboration with current leader, organizational tenure, and industry sector.

Research Materials

<u>Complete List of Variables Assessed in this Study</u>

Variables are listed in the actual survey order. Variables in bold are core measures in *Chapter 3*; variables not in bold were assessed for a different research question not targeted in the chapter.

- **Perceived leader opportunity**
- **Perceived leader responsibility**
- **Frequency of interaction**
- **Digitalization of interaction**
- Follower effort (10 items; De Cooman et al., 2009)
- Follower innovative work behavior (9 items; Janssen, 2000)
- Regulatory mode (RQM, 24 items; Kruglansky et al., 2000)

<u>Core Measures of Study 3.2</u>

Perceived Leader Opportunity:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

<u>Instruction</u>:

When people have a supervisor, manager, or leadership role, they often make important decisions, evaluate the performance of others, and work on projects with their employees (e.g., team members, etc.).

The following questions focus on your impression of how your supervisor ***understands his or her position*** *in working with subordinates. In case you are reporting to several*

people, please respond to the questions on this page and the following pages regarding the person who is ***evaluating your performance.***
How do you feel that the following applies to your leader ***when collaborating with others****?*

<u>Items</u>:

- *My leader enjoys when his/her subordinates follow his/her guidance.*
- *My leader cares about being in full control about what he/she does.*
- *My leader feels that he/she can follow his/her own ideas.*
- *My leader feels that he/she is in control.*
- *The things my leader does are directed by his/her free will.*

Perceived Leader Responsibility:
Seven-point scale, anchors "strongly disagree" (1) and "strongly agree" (7)

<u>Instruction</u>:

When people have a supervisor, manager, or leadership role, they often make important decisions, evaluate the performance of others, and work on projects with their employees (e.g., team members, etc.).
The following questions focus on your impression of how your supervisor ***understands his or her position*** *in working with subordinates. In case you are reporting to several people, please respond to the questions on this page and the following pages regarding the person who is* ***evaluating your performance.***
How do you feel that the following applies to your leader ***when collaborating with others****?*

<u>Items</u>:

- *My leader is always concerned about how his/her actions will impact others.*
- *My leader feels a great deal of responsibility for the people he/she works with.*
- *My leader feels the duty to make sure that nobody is stressed at work.*
- *My leader feels that he/she needs to take care of other people's needs.*
- *My leader feels responsible for other people's situation.*

Frequency of Interaction:

Seven-point scale, anchors “once or twice in six months” (1) and “many times daily” (7)

Instruction:

Finally, we are interested in the way you are interacting with your leader. Please think about your collaboration with your leader and answer the questions below.

Items:

- *How frequently do you interact with your leader at work?*
- *How frequently does your leader initiate work-related interaction with you?*
- *How frequently do you initiate work-related interaction with your leader?*

Digitalization of Interaction:

Seven-point scale, anchors “strongly disagree” (1) to “strongly agree” (7)

Instruction:

Finally, we are interested in the way you are interacting with your leader. Please think about your collaboration with your leader and answer the questions below.

Items:

- *My leader and I mostly exchange questions digitally instead of asking each other in person.*
- *My leader and I mostly interact using media (e.g., phone, email) rather than talking face-to-face.*
- *To what extent did the contact occur digitally or via telephone, but not face to face?* (Percent slider)

Appendix C – Additional Information for Chapter 4

Deviations From Preregistrations

Study	Paper vs. Preregistration
Study 4.1	***Hypotheses***: *Preregistration*: H1 predicts that perceived responsibility predicts more follower engagement; this prediction was instead made for perceived opportunity in the paper for subsequent studies, as we found no evidence for the former H1 in Study 4.1 *Preregistration*: H1 was formulated for a two-wave longitudinal study; however, we only conducted one data collection wave ***Variables***: *Paper*: perceived opportunity is labeled predictor and treated as such *Preregistration*: perceived opportunity is labeled control variable *Preregistration*: the effort scale from De Cooman et al. contained a misspelling: the scale is from 2009 (instead of 2019) ***Analyses***: *Preregistration*: analyses were formulated for a two-wave longitudinal study; however, we only conducted one data collection wave
Study 4.3	***Hypotheses***: *Preregistration*: we preregistered H2 only in the second preregistration of Study 4.3, which referred to the third wave of data collection (time 3). In the first preregistration, the analysis testing H2 was preregistered as additional analysis. ***Variables***: *Preregistration*: the effort scale from De Cooman et al. contained a misspelling: the scale is from 2009 (instead of 2019)

Additional Information for Study 4.1

Pre-Registration

Created:	07/27/2022 05:58 AM (PT)
Made public:	Will be made publicly available after publication
Available at:	https://aspredicted.org/PQR_5GW (anonymized for peer review)

1) Have any data been collected for this study already?

No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?

RQ: Does leader social responsibility (as perceived by followers, controlling for leader opportunity) at time 1 (t1) predict follower engagement at a later point in time (t2)? This study is part one of a planned longitudinal two-part study series on this research question. We plan to conduct the second part approximately 8 weeks after the first.

H1: The higher leader social responsibility (t1), the higher will be follower engagement (t2).

3) Describe the key dependent variable(s) specifying how they will be measured.

DV: Follower engagement will be measured through

(1) Effort (10 items, De Cooman et al., 2019) at t2

(2) Organizational Citizenship Behavior (OCB, 16 items, adapted from Smith et al., 1983) at t2

4) How many and which conditions will participants be assigned to?

No experimental conditions. This study has a longitudinal design.

Predictor: Leader social responsibility at t1 (as perceived by followers, 5 items, adapted from Scholl et al., 2020)

Control Variables: Leader opportunity at t1 (as perceived by followers, 5 items, adapted from Scholl et al., 2020); follower engagement at t1

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

2 multiple regression analyses predicting engagement (measured through (1) effort and (2) OCB) at t2 from leader social responsibility (controlling for leader opportunity and engagement), all at t1

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

Inclusion criteria:

- having a direct supervisor at work

- employment to an extent of at least 21 hours/week

- speaking English fluently

- attention check passed (1 item)

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

*Ideal N=324, g*power analysis (multiple regression analysis) with alpha .05, power 0.8, f2=0.034 (effect size determined based on previous studies); 3 predictors (leader* *social responsibility at t1, leader opportunity [control] at t1, engagement [control] at t1).*

We aim to collect N = 600 participants to compensate for exclusions and attrition between t1 and t2.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)

We also assess age, gender, work hours, duration of collaboration with current leader, organizational tenure, and industry sector.

Research Materials

<u>Complete List of Variables Assessed in this Study</u>

Variables are listed in the actual survey order.

- Perceived leader opportunity
- Perceived leader responsibility
- Follower effort
- Follower OCB

<u>Core Measures of Study 4.1</u>

Perceived Leader Opportunity:

Seven-point scale, anchors "strongly disagree" (1) and "strongly agree" (7)

<u>Instruction</u>:

When people have a supervisor, manager, or leadership role, they often make important decisions, evaluate the performance of others, and work on projects with their employees (e.g., team members, etc.).

*The following questions focus on your impression of how your supervisor **understands his or her position** in working with subordinates. In case you are reporting to several people, please respond to the questions on this page and the following pages regarding the person who is **evaluating your performance.***

*How do you feel that the following applies to your leader **when collaborating with others**?*

<u>Items</u>:

- *My leader perceives many possibilities to reach his/her goals.*

- *My leader makes use of the opportunities to be successful.*
- *My leader feels that he/she is in control.*
- *My leader feels that he/she can follower his/her own ideas.*
- *My leader can see all the possibilities that he/she has.*

Perceived Leader Responsibility:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

Instruction:

When people have a supervisor, manager, or leadership role, they often make important decisions, evaluate the performance of others, and work on projects with their employees (e.g., team members, etc.).

The following questions focus on your impression of how your supervisor ***understands his or her position*** *in working with subordinates. In case you are reporting to several people, please respond to the questions on this page and the following pages regarding the person who is* ***evaluating your performance.***

How do you feel that the following applies to your leader ***when collaborating with others****?*

Items:

- *My leader feels responsible for other people’s situation.*
- *My leader is concerned about other people’s well-being.*
- *My leader feels that he/she needs to take care of other people’s needs.*
- *My leader thinks about how his/her decisions impact others.*
- *My leader is concerned about how much he/she can expect from others.*

Follower Effort:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

Instruction:

Now we are interested in the way you are ***handling your work****. Please think about the* ***collaboration with your leader*** *and answer spontaneously and sincerely.*

Items:

- *I do not give up quickly when something does not work well.*
- *I really do my best to get my work done, regardless of potential issues.*
- *When I start an assignment I pursue it to the end.*

- *I do my best to do what is expected of me.*
- *I am trustworthy in the execution of the tasks that are assigned to me.*
- *I really do my best to achieve the objectives of the organization.*
- *I think of myself as a hard worker.*
- *I really do my best in my job.*
- *I put a lot of energy into the tasks that I commence.*
- *I always exert equally hard during the execution of my job.*

Follower OCB:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

Instruction:

*The following statements again regard your **behavior at work**. Please indicate to what extent you feel that the following statements are applicable to the way you are working **in general**.*

Items:

- *I help others who have been absent.*
- *I am punctual.*
- *I volunteer for things that are not required.*
- *I take undeserved breaks.*
- *I orient new people even though it is not required.*
- *My attendance at work is above the norm.*
- *I help others who have heavy work loads.*
- *I coast toward the end of the day.*
- *I give advance notice if unable to come to work.*
- *I spend a great deal of time with personal phone conversations.*
- *I do not take unnecessary time off work.*
- *I assist my supervisor with his/her work.*
- *I make innovative suggestions to improve my department.*
- *I do not take extra breaks.*
- *I attend functions that are not required but that help my company’s image.*
- *I do not spend time in idle conversation*

Additional Analyses

Table C1

Results From Exploratory Factor Analysis of the Opportunity and Responsibility Scales in Study 4.1 (N = 598)

Item		Factor	
		1	2
1	My leader is concerned about other people's well-being.	**0.91**	
2	My leader feels that he/she needs to take care of other people's needs.	**0.90**	
3	My leader thinks about how his/her decisions impact others.	**0.85**	
4	My leader feels responsible for other people's situation.	**0.73**	
5	My leader is concerned about how much he/she can expect from others.	0.47	0.43
6	My leader feels that he/she is in control.		**0.80**
7	My leader feels that he/she can follow his/her own ideas.		**0.80**
8	My leader can see all the possibilities he/she has.	0.41	0.73
9	My leader makes use of the opportunities to be successful.	0.41	0.72
10	My leader perceives many possibilities to reach his/her goals.	0.56	0.60

Note. The extraction method was principal axis factoring with an orthogonal (varimax) rotation and Kaiser normalization. Factor loadings <.3 are not displayed. Items 1 to 5 belong to the responsibility scale, items 5 to 10 belong to the opportunity scale. Factor loadings loading on one factor only are highlighted in bold.

Additional Information for Study 4.2

Research Materials

Complete List of Variables Assessed in this Study

Variables are listed in the actual survey order.

- Perceived leader opportunity
- Perceived leader responsibility
- Follower effort
- Follower IWB

<u>Core Measures of Study 4.2</u>

Perceived Leader Opportunity:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

<u>Instruction</u>:

When people have a supervisor, manager, or leadership role, they often make important decisions, evaluate the performance of others, and work on projects with their employees (e.g., team members, etc.).

The following questions focus on your impression of how your supervisor ***understands his or her position*** *in working with subordinates. In case you are reporting to several people, please respond to the questions on this page and the following pages regarding the person who is* ***evaluating your performance.***

How do you feel that the following applies to your leader ***when collaborating with others****?*

<u>Items</u>:

- *My leader enjoys when his/her subordinates follow his/her guidance.*
- *My leader cares about being in full control about what he/she does.*
- *My leader feels that he/she can follow his/her own ideas.*
- *My leader feels that he/she is in control.*
- *The things my leader does are directed by his/her free will.*

Perceived Leader Responsibility:

Seven-point scale, anchors “strongly disagree” (1) and “strongly agree” (7)

<u>Instruction</u>:

When people have a supervisor, manager, or leadership role, they often make important decisions, evaluate the performance of others, and work on projects with their employees (e.g., team members, etc.).

The following questions focus on your impression of how your supervisor ***understands his or her position*** *in working with subordinates. In case you are reporting to several people, please respond to the questions on this page and the following pages regarding the person who is* ***evaluating your performance.***

How do you feel that the following applies to your leader ***when collaborating with others****?*

Items:

- *My leader is always concerned about how his/her actions will impact others.*
- *My leader feels a great deal of responsibility for the people he/she works with.*
- *My leader feels the duty to make sure that nobody is stressed at work.*
- *My leader feels that he/she needs to take care of other people's needs.*
- *My leader feels responsible for other people's situation.*

Follower Effort:

Seven-point scale, anchors "strongly disagree" (1) and "strongly agree" (7)

Instruction:

*Now we are interested in the way you are **handling your work**. Please think about the **collaboration with your leader** and answer spontaneously and sincerely.*

Items:

- *I do not give up quickly when something does not work well.*
- *I really do my best to get my work done, regardless of potential issues.*
- *When I start an assignment I pursue it to the end.*
- *I do my best to do what is expected of me.*
- *I am trustworthy in the execution of the tasks that are assigned to me.*
- *I really do my best to achieve the objectives of the organization.*
- *I think of myself as a hard worker.*
- *I really do my best in my job.*
- *I put a lot of energy into the tasks that I commence.*
- *I always exert equally hard during the execution of my job.*

Follower IWB:

Seven-point scale, anchors "never" (1) and "always" (7)

Instruction:

The following statements again regard your behavior at work. Please indicate to what extent you feel that the following statements are applicable to the way you are working in general.

Items:

- *I create new ideas for difficult issues.*
- *I search out new working methods, techniques, or instruments.*

- *I generate original solutions for problems.*
- *I mobilize support for innovative ideas.*
- *I acquire approval for innovative ideas.*
- *I make important organizational members enthusiastic for innovative ideas.*
- *I transform innovative ideas into useful applications.*
- *I introduce innovative ideas into the work environment in a systematic way.*
- *I evaluate the utility of innovative ideas.*

Additional Analyses

We also conducted multiple regression analyses including all newly created items in the two power construal scales (i.e., also the omitted items for opportunity and responsibility), regressing effort and IWB, respectively, on the two predictors opportunity and responsibility. Results showed that, consistent with Study 4.1, more opportunity predicted greater effort (b = 0.37, SE = 0.10, p < .001), and also more IWB (b = 0.42. SE = 0.12, p < .001). Responsibility again predicted neither effort (b = 0.04, SE = 0.07, p = .548), nor IWB (b = 0.04, SE = 0.08, p = .618).

Additional Information for Study 4.3

Pre-Registration

Time 1

Created:	10/14/2022 12:38 AM (PT)
Made public:	Will be made publicly available after publication
Available at:	https://aspredicted.org/ZMW_18T (anonymized for peer review)

1) Have any data been collected for this study already?

No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?

RQ: Does leader opportunity (as perceived by followers, controlling for leader social responsibility) at time 1 (t1) predict follower engagement at a later point in time (t2)?

H1: The higher leader opportunity (t1), the higher will be follower engagement (t2).

3) Describe the key dependent variable(s) specifying how they will be measured.

Follower engagement will be measured through

(1) Effort (10 items, De Cooman et al., 2019)

(2) Innovative Work Behavior (IWB, 9 items, Janssen, 2000)

Given that this is a 2-wave longitudinal study, both measures are taken at the first and the second measurement occasion (approximately 12 weeks apart).

4) How many and which conditions will participants be assigned to?

No experimental conditions.

Predictors: Leader opportunity at t1 (as perceived by followers, 5 items, self-developed), leader social responsibility at t1 (as perceived by followers, 5 items, self-developed)

Control variables: Follower effort at t1, follower IWB at t1

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

2 multiple regression analyses predicting engagement (measured through (1) effort and (2) IWB) at t2 from leader social responsibility, leader opportunity, and the respective outcome, all at t1

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

Inclusion criteria:

- having a direct supervisor at work

- employment to an extent of at least 21 hours/week

- speaking English fluently

- attention check passed (1 item)

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

*Ideal N=324, g*power analysis (multiple regression analysis) with alpha .05, power 0.8, f2=0.034 (effect size determined based on previous studies); 3 predictors (leader opportunity at t1, leader social responsibility [control] at t1, engagement [control] at t1).*

We aim to collect N = 600 participants to compensate for exclusions and attrition between t1 and t2.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)

For exploratory purposes, we also assess frequency (3 items) and digitalization of interaction (3 items) between leader and follower.

In addition we also assess follower well-being (10 items, HSCL-10, Tambs, 2004) to test whether it is predicted by leader social responsponsibility.

Finally, we assess age, gender, work hours, duration of collaboration with current leader, organizational tenure, and industry sector.

Time 2

Created:	01/10/2023 12:11 AM (PT)
Made public:	Will be made publicly available after publication
Available at:	https://aspredicted.org/FG5_MR9 (anonymized for peer review)

1) Have any data been collected for this study already?

It's complicated. We have already collected some data but explain in Question 8 why readers may consider this a valid pre-registration nevertheless.

2) What's the main question being asked or hypothesis being tested in this study?

This study is time 2 of a two-wave longitudinal study.

RQ: Does leader opportunity (as perceived by followers, controlling for leader social responsibility) at time 1 (t1) predict follower engagement at a later point in time (t2)?

H1: The higher leader opportunity (t1), the higher will be follower engagement (t2).

H2: The higher leader responsibility (t1), the higher will be follower well-being (t2).

3) Describe the key dependent variable(s) specifying how they will be measured.

Follower engagement will be measured through

(1) Effort (10 items, De Cooman et al., 2019)

(2) Innovative Work Behavior (IWB, 9 items, Janssen, 2000)

(3) Follower well-being (10 items, HSCL-10, Tambs, 2004)

4) How many and which conditions will participants be assigned to?

No experimental conditions.

Predictors: Leader opportunity at t1 (as perceived by followers, 5 items, self-developed), leader social responsibility at t1 (as perceived by followers, 5 items, self-developed)

Control variables: Follower effort at t1, follower IWB at t1, follower well-being at t1

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

3 multiple regression analyses predicting engagement (measured through (1) effort and (2) IWB) and follower well-being at t2, respectively, from leader social responsibility, leader opportunity, and the respective outcome, all at t1

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

Inclusion criteria:

- having a direct supervisor at work

- employment to an extent of at least 21 hours/week

- speaking English fluently

- attention check passed (1 item)

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

We will invite all participants of wave 1 of this study's data collection that, beyond that, still meet the inclusion criteria (N=540).

*For wave 1, ideal N=324, g*power analysis (multiple regression analysis) with alpha .05, power 0.8, f2=0.034 (effect size determined based on previous studies); 3 predictors (leader opportunity at t1, leader social responsibility [control] at t1, respective outcome [control] at t1).*

At t1, we aimed to collect N = 600 participants to compensate for exclusions and attrition between t1 and t2.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)

Hypothesis 1 was already pre-registered in another pre-registration. However, as we found significant relations between leader responsibility and follower well-being (as we pre-registered as exploratory analyses) in the cross-sectional data of t1 of this two-wave study, we here additionally pre-register the above mentioned H2 for t2 (which has not been conducted yet).

We will check whether results differ depending on whether people are still reporting to the same leader as in t1; if this should be the case, we will exclude people whose leader changed.

We also assess age, gender, work hours, duration of collaboration with current leader, organizational tenure, and industry sector.

Time 3

Created:	04/11/2023 07:02 AM (PT)
Made public:	Will be made publicly available after publication
Available at:	https://aspredicted.org/T1K_SYG (anonymized for peer review)

1) Have any data been collected for this study already?

It's complicated. We have already collected some data but explain in Question 8 why readers may consider this a valid pre-registration nevertheless.

2) What's the main question being asked or hypothesis being tested in this study?

This study is time 3 of a three-wave longitudinal study.

RQ: Does leader's construal of power (as perceived by followers) at time 1 (t1) predict follower engagement and follower well-being at a later point in time (t3)?

H1: The higher leader opportunity (t1), the higher will be follower engagement (t3).

H2: The higher leader responsibility (t1), the higher will be follower well-being (t3).

3) Describe the key dependent variable(s) specifying how they will be measured.

Follower engagement will be measured through

(1) Effort (10 items, De Cooman et al., 2009)

(2) Innovative Work Behavior (IWB, 9 items, Janssen, 2000)

Follower well-being will be measured through 10 items (HSCL-10, Tambs, 2004)

4) How many and which conditions will participants be assigned to?

No experimental conditions.

Predictors: Leader opportunity at t1 (as perceived by followers, 5 items, self-developed), leader social responsibility at t1 (as perceived by followers, 5 items, self-developed)

Control variables: Follower effort at t1, follower IWB at t1, follower well-being at t1

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

3 multiple regression analyses predicting engagement (measured through (1) effort and (2) IWB) and follower well-being at t3, respectively, from leader social responsibility, leader opportunity, and the respective outcome, all at t1

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

Inclusion criteria:

- having a direct supervisor at work

- employment to an extent of at least 21 hours/week

- speaking English fluently

- attention check passed (1 item)

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

We will invite all participants of wave 1 of this study's data collection that, beyond that, still meet the inclusion criteria (N=432). Data will be collected for two weeks after the first invitation.

*For wave 1, ideal N=324, g*power analysis (multiple regression analysis) with alpha .05, power 0.8, f2=0.034 (effect size determined based on previous studies); 3 predictors (leader opportunity at t1, leader social responsibility at t1, respective outcome [control] at t1).*

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)

This study was initially planned as a two-wave study. However, as we did not observe the expected relations at t2 and the time-lag between t1 and t2 was rather small (3 months), we here additionally pre-register a third wave to investigate whether the expected relations will be present with a greater time-lag (6 months between t1 and t3).

We will check whether results differ depending on whether people are still reporting to the same leader as in t1; if this should be the case, we will exclude people whose leader changed.

For exploratory purposes, we also assess frequency (3 items) and digitalization of interaction (3 items) between leader and follower.

We also assess age, gender, work hours, duration of collaboration with current leader, organizational tenure, and industry sector.

Research Materials

Complete List of Variables Assessed in this Study

Variables in bold are included in the manuscript; variables not in bold were assessed for a different research question not targeted in Chapter 4.

- **Perceived leader opportunity**
- **Perceived leader responsibility**
- **Follower effort**
- **Follower innovative work behavior**

- **Follower well-being**
- Frequency of interaction (3 items; adapted from McAllister, 1995)
- Digitalization of interaction (3 items; self-developed)

Core Measures of Study 4.3

Perceived Leader Opportunity:

Seven-point scale, anchors "strongly disagree" (1) and "strongly agree" (7)

Instruction:

When people have a supervisor, manager, or leadership role, they often make important decisions, evaluate the performance of others, and work on projects with their employees (e.g., team members, etc.).

The following questions focus on your impression of how your supervisor ***understands his or her position*** *in working with subordinates. In case you are reporting to several people, please respond to the questions on this page and the following pages regarding the person who is* ***evaluating your performance.***

How do you feel that the following applies to your leader **when collaborating with others***?*

Items:

- *My leader enjoys when his/her subordinates follow his/her guidance.*
- *My leader cares about being in full control about what he/she does.*
- *My leader feels that he/she can follow his/her own ideas.*
- *My leader feels that he/she is in control.*
- *The things my leader does are directed by his/her free will.*

Perceived Leader Responsibility:

Seven-point scale, anchors "strongly disagree" (1) and "strongly agree" (7)

Instruction:

When people have a supervisor, manager, or leadership role, they often make important decisions, evaluate the performance of others, and work on projects with their employees (e.g., team members, etc.).

The following questions focus on your impression of how your supervisor ***understands his or her position*** *in working with subordinates. In case you are reporting to several people, please respond to the questions on this page and the following pages*

*regarding the person who is **evaluating your performance.***
*How do you feel that the following applies to your leader **when collaborating with others**?*

<u>Items</u>:

- *My leader is always concerned about how his/her actions will impact others.*
- *My leader feels a great deal of responsibility for the people he/she works with.*
- *My leader feels the duty to make sure that nobody is stressed at work.*
- *My leader feels that he/she needs to take care of other people's needs.*
- *My leader feels responsible for other people's situation.*

Follower Effort:
Seven-point scale, anchors "strongly disagree" (1) and "strongly agree" (7)

<u>Instruction</u>:

*Now we are interested in the way you are **handling your work**. Please think about the **collaboration with your leader** and answer spontaneously and sincerely.*

<u>Items</u>:

- *I do not give up quickly when something does not work well.*
- *I really do my best to get my work done, regardless of potential issues.*
- *When I start an assignment I pursue it to the end.*
- *I do my best to do what is expected of me.*
- *I am trustworthy in the execution of the tasks that are assigned to me.*
- *I really do my best to achieve the objectives of the organization.*
- *I think of myself as a hard worker.*
- *I really do my best in my job.*
- *I put a lot of energy into the tasks that I commence.*
- *I always exert equally hard during the execution of my job.*

Follower IWB:
Seven-point scale, anchors "never" (1) and "always" (7)

<u>Instruction</u>:

The following statements again regard your behavior at work. Please indicate to what extent you feel that the following statements are applicable to the way you are working in general.

Items:

- *I create new ideas for difficult issues.*
- *I search out new working methods, techniques, or instruments.*
- *I generate original solutions for problems.*
- *I mobilize support for innovative ideas.*
- *I acquire approval for innovative ideas.*
- *I make important organizational members enthusiastic for innovative ideas.*
- *I transform innovative ideas into useful applications.*
- *I introduce innovative ideas into the work environment in a systematic way.*
- *I evaluate the utility of innovative ideas.*

Additional Analyses

We also analyzed the data longitudinally from t1 to t2 including participants whose leader changed between t1 and t2 (see Table C2). Opportunity at t1 predicted more effort at t2 ($t = 2.43$, $p = .016$), but not more IWB at t2 ($t = 0.53$, $p = .599$). Accordingly, our findings were only partly in line with Hypothesis 1, which states that perceived leader opportunity would predict more follower engagement. Responsibility at t1 was not related to either follower effort at t2 or IWB at t2 (both *t*s < |1.5|, both *p*s > .15). Furthermore, we found no evidence for our second hypothesis that responsibility at t1 predicts more follower well-being at t2 ($t = -1.26$, $p = .207$). Opportunity at t1did not predict follower well-being at t2 either ($t = 1.35$, $p = .176$).

Table C2

Multiple Regression Aanalyses of Study 4.3 Testing How Perceived Leader Opportunity and Responsibility (Both t1) Predict Follower Outcomes (t2; N = 456)

	Outcome t2														
	Effort					IWB					Well-being				
Predictor	R^2adj	*F*	*b*	*SE*	*p*	R^2adj	*F*	*b*	*SE*	*p*	R^2adj	*F*	*b*	*SE*	*p*
Model	.601	229.36			< .001	.565	198.32			< .001	.581	211.00			< .001
Outcome (t1)			0.82	0.04	< .001			0.78	0.04	< .001			0.78	0.03	< .001
Opportunity			0.09	0.04	.016			0.02	0.05	.599			0.03	0.02	.176
Responsibility			-0.03	0.02	.146			0.03	0.03	.323			-0.02	0.02	.207

Note. For outcome effort t2, ‘outcome t1’ refers to effort t1; for outcome IWB t2, ‘outcome t1’ refers to IWB t1; for outcome well-being t2, ‘outcome t1’ refers to well-being t1.

Furthermore, we also analyzed the data longitudinally from t1 to t3 including participants whose leader changed between t1 and t3 (see Table C3). Opportunity (t1) predicted more IWB at t3 ($t =$ 1.99, p = .048). The effect of opportunity on effort did not reach conventional levels of significance, but pointed in the same direction (t = 1.46, p = .144). Accordingly, the findings again provided evidence partially in line with Hypothesis 1, though at or beyond borderline levels of significance. In contrast, responsibility (t1) was not related to either effort or IWB at t3 (both *t*s < 0.75, both *p*s > .450). As at t2, responsibility (t1) did not predict well-being at t3 (t = 0.23, p = .818), as opportunity at t1 did not (t = 1.42, p = .157). Thus, we again found no evidence for Hypothesis 2.

Table C3

Multiple Regression Analyses of Study 4.3 Testing How Perceived Leader Opportunity and Responsibility (Both t1) Predict Follower Outcomes (t3; N = 379)

	Outcome t3														
	Effort					IWB					Well-being				
Predictor	R^2adj	*F*	*b*	*SE*	*p*	R^2adj	*F*	*B*	*SE*	*p*	R^2adj	*F*	*b*	*SE*	*p*
Model	.639	223.79			< .001	.521	138.13			< .001	.577	173.10			< .001
Outcome (t1)			0.83	0.04	< .001			0.79	0.04	< .001			0.76	0.03	< .001
Opportunity			0.06	0.04	.144			0.11	0.05	.048			0.04	0.03	.157
Responsibility			0.02	0.02	.460			-0.02	0.04	.629			0.00	0.02	.818

Note. For outcome effort t3, 'outcome t1' refers to effort t1; for outcome IWB t3, 'outcome t1' refers to IWB t1; for outcome well-being t3, 'outcome t1' refers to well-being t1.

Summary

The contemporary work environment is constantly evolving—nowadays, it comprises a variety of new working models, such as work-from-home arrangements, flexible working hours, and virtual teams. These developments have been further expedited by the COVID-19 pandemic. As a consequence, leaders and followers work increasingly often at different locations, which implies an incresaing physical distance between them (Antonakis & Atwater, 2002; Bell & Kozlowski, 2002; Rudolph et al., 2021). The decreasing *frequency* and increasing *digitalization* of leader-follower interaction resulting from this physical distance (Brunelle, 2013; Kahai, 2013; Kelley & Kelloway, 2012) likely entail uncertainty for followers—regarding what they are expected to do and how to do it (i.e., on a task level), and regarding the way their leader feels about them (i.e., on a relational level). This uncertainty might ultimately threaten followers' performance in the sense of assuming responsibility for and engaging in their tasks (e.g., Hu & Liden, 2011; Locke & Latham, 1990; Maier & Brunstein, 2001; Martin et al., 2016). Therefore, understanding how the frequency and digitalization of leader-follower interaction are linked to outcomes on the task level and the relational level is crucial—so that leaders and followers can manage effective collaboration, despite the major changes they experience in today's work environment. The current dissertation targeted this issue by investigating how followers might be affected by the frequency and digitalization of interaction with their leader (1) on a task level and (2) on a relational level. Finally, it investigated how the relational level and the task level relate to each other.

This research question was investigated in several empirical field studies with followers across organizational contexts. The findings indicate that the frequency, but not the digitalization with which leaders and followers interact with each other is linked to better outcomes on a task level (i.e., more follower goal clarity, norm clarity, and perceived task responsibility). Regarding the relational level, however, the findings suggest that the frequency constitutes the outcome rather than the predictor: how followers perceive their leader in their working relationship (i.e., how many *opportunities* the leader sees in pursuing goals in their role) predicted the frequency of their interactions, as well as more follower engagement.

Taken together, the findings of the current dissertation contribute to an understanding of how effective leader-follower collaboration can be ensured despite an (on average) increasing distance between them. They suggest that better outcomes on a task level might be achieved if leaders and followers manage to stay in frequent touch with each other, regardless of whether this contact happens digitalized or face-to-face—which entails a positive message for flexible work models. Furthermore, the findings suggest that followers' leader perception

(i.e., perceived leader opportunity) might be an underlying relational factor that contributes to better outcomes on the task level (i.e., more engangement) and a higher frequency of interaction—rendering it a potential factor for facilitating frequent leader-follower interaction and ensuring better task outcomes.

Deutsche Zusammenfassung

Das heutige Arbeitsumfeld entwickelt sich stetig weiter und umfasst eine Vielzahl neuer Arbeitsmodelle, wie z. B. Home-Office Regelungen, flexible Arbeitszeiten und virtuelle Teams. Diese Entwicklungen wurden durch die COVID-19-Pandemie noch beschleunigt. Infolgedessen arbeiten Führungskräfte und Mitarbeitende immer häufiger an unterschiedlichen Orten, was eine (im Durchschnitt) steigende räumliche Distanz zwischen ihnen zur Folge hat (Antonakis & Atwater, 2002; Bell & Kozlowski, 2002; Rudolph et al., 2021). Die abnehmende Häufigkeit und zunehmende Digitalisierung der Interaktionen zwischen Führungskräften und Mitarbeitenden, die sich aus dieser Distanz ergibt (Brunelle, 2013; Kahai, 2013; Kelley & Kelloway, 2012), bringt vermutlich Unsicherheiten für die Mitarbeitenden mit sich—in Bezug auf das, was von ihnen erwartet wird (d. h. auf der Aufgabenebene) und in Bezug auf die Art und Weise, wie ihre Führungskraft zu ihnen steht (d. h. auf der Beziehungsebene). Diese Unsicherheiten könnten letztlich die Leistung der Mitarbeitenden im Sinne der Übernahme von Verantwortung und Engagement für ihre Aufgaben gefährden (z. B. Hu & Liden, 2011; Locke & Latham, 1990; Maier & Brunstein, 2001; Martin et al., 2016). Daher ist es von entscheidender Bedeutung zu verstehen, wie die Häufigkeit und die Digitalisierung der Interaktionen zwischen Führungskräften und Mitarbeitenden mit Variablen auf der Aufgaben- und der Beziehungsebene zusammenhängen, damit Führungskräfte und Mitarbeitende trotz der großen Veränderungen, die sie in der heutigen Arbeitsumgebung erleben, eine effektive Zusammenarbeit gestalten können. Die vorliegende Dissertation befasste sich mit dieser Frage, indem sie untersuchte, wie sich die Häufigkeit und die Digitalisierung der Interaktion mit der Führungskraft bei Mitarbeitenden (1) auf die Aufgabenebene und (2) auf die Beziehungsebene auswirken können. Schließlich wurde untersucht, wie sich die Beziehungsebene und die Aufgabenebene zueinander verhalten.

Diese Forschungsfrage wurde in mehreren empirischen Feldstudien mit Mitarbeitenden in verschiedenen Organisationskontexten untersucht. Die Ergebnisse deuten darauf hin, dass die Häufigkeit, nicht aber die Digitalisierung, mit der Führungskräfte und Mitarbeitende miteinander interagieren, mit besseren Ergebnissen auf der Aufgabenebene verbunden ist (d. h. mit mehr Zielklarheit, Normenklarheit und wahrgenommener Aufgabenverantwortung der Mitarbeitenden). In Bezug auf die Beziehungsebene deuten die Ergebnisse jedoch darauf hin, dass die Häufigkeit der Interaktion eher das Ergebnis als den Prädiktor darstellt: Die Art und Weise, wie die Mitarbeitenden ihre Führungskraft in ihrer Arbeitsbeziehung wahrnehmen (d. h. wie viele Möglichkeiten die Führungskraft in ihrer Rolle sieht, Ziele zu verfolgen), sagte die Häufigkeit ihrer Interaktionen sowie ein größeres Engagement der Mitarbeitenden vorher.

Zusammengenommen tragen die Ergebnisse der vorliegenden Dissertation zum Verständnis der Frage bei, wie eine effektive Zusammenarbeit zwischen Führungskräften und Mitarbeitenden trotz einer zunehmenden Distanz zwischen ihnen gewährleistet werden kann. Sie deuten darauf hin, dass bessere Ergebnisse auf der Aufgabenebene erzielt werden können, wenn es Führungskräften und Mitarbeitern gelingt, häufig miteinander in Kontakt zu bleiben. Dies scheint unabhängig davon zu sein, ob dieser Kontakt digital oder in Präsenz stattfindet – was eine positive Botschaft für flexible Arbeitsmodelle darstellt. Darüber hinaus deuten die Ergebnisse darauf hin, dass die Wahrnehmung der Mitarbeitenden ihrer Führungskraft (d. h. dass die Führungskraft die Möglichkeiten sieht, Ziele zu verfolgen) ein zugrundeliegender Faktor sein könnte, der zu besseren Ergebnissen auf der Aufgabenebene (d. h. zu mehr Engagement) und einer höheren Interaktionshäufigkeit beiträgt – was ihn zu einem potenziellen Faktor macht, der häufige Interaktionen zwischen Führungskräften und Mitarbeitenden erleichtern und bessere Ergebnisse auf der Aufgabenebene gewährleisten könnte.

Eidesstattliche Erklärung

Ich erkläre hiermit, dass ich die zur Promotion eingereichte Arbeit mit dem Titel „Leader-Follower Interactions in Times of Increasing Distance: Implications for Followers on the Task Level and the Relational Level" selbständig verfasst, nur die angegebenen Quellen und Hilfsmittel benutzt und wörtlich oder inhaltlich übernommene Stellen als solche gekennzeichnet habe. Ich erkläre, dass die Richtlinien zur Sicherung guter wissenschaftlicher Praxis der Universität Tübingen (Beschluss des Senats vom 25.5.2000) beachtet wurden. Ich versichere an Eides statt, dass diese Angaben wahr sind und dass ich nichts verschwiegen habe. Mir ist bekannt, dass die falsche Abgabe einer Versicherung an Eides statt mit Freiheitsstrafe bis zu drei Jahren oder mit Geldstrafe bestraft wird.

Tübingen, 23.10.23

Ort, Datum Unterschrift