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„Comparing transformational and transactional leadership effects on knowledge donating: how psychological safety and goal orientations condition these dynamics."


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## 1 Introduction

The previous two decades have been referred to as the 'knowledge era' (Wang & Ahmed, 2003). An era in which firms are trying to outmatch competitors with innovations and their highly knowledgeable workforce. Naturally, the effective management of a company's knowledge economy has become a key asset for many firms, especially as today's market is driven by shorter product cycles and rapid changes in consumer habits (Niinimäki et al., 2020, p. 195). As a result, organizations are keen to invest in internal structures and work environments that promote a constant flow of knowledge. The effective management of such internal resources often depends on leadership (Hayat Bhatti et al., 2022, p. 4, Ugwu et al., 2020). Since leaders have a vital function in guiding employees, they have become instrumental for establishing knowledge sharing practices in organizations. Al Amiri et al. (2020, p. 251) observe that depending on the leadership style employed the outcomes can vary, especially in the case of two dominant leadership styles such as transformational leadership and transactional leadership.

Leaders practicing transactional leadership recognize their employees' needs and wants and define how these will be met once a given task is well performed (Jung, 2001, p. 188). It is therefore often described as an implicit contract in which an employee's good performance is being exchanged for intangible or tangible rewards (Waldman et al., 1990).

Transformational leadership is the process of transforming employees' concept of self so that they can reach their highest potential while being guided by their leader and mentor (Bass & Avolio, 1997; Jung, 2001). It is a leadership style that nurtures employee relationships, builds trust, is emotionally more inclusive and interactive (Wang & Ahmed, 2003), and tends to build knowledge hubs by intellectually and emotionally stimulating its followers (Jung, 2001).

Scholars have confirmed that these two leadership styles significantly impact the exchange of knowledge between members (Ugwu et al., 2020). However, practitioners of these leadership styles still face a great challenge, one that has gained momentum in recent years, namely

employees' fear of losing knowledge power by donating their intellectual capital (Iqbal et al., 2022). Thus, special attention needs to be given to how these two dominant leadership styles can mitigate this psychological barrier that particularly inhibits the *donation* of knowledge.

Psychological safety has been identified as a key variable in reducing psychological barriers. Researchers have found that leaders who are supportive of their employees' aspirations have the ability to create safe and comfortable environments in which team members are more likely to engage in collaborative behaviors (Shao et al., 2017). Thus, identifying and strengthening the level of psychological safety is of vital concern for organizations' knowledge economies. How transformational and transactional leaders can use this mechanism remains, however, under-researched (Yin et al., 2020). With this paper, the current state of research on the role psychological safety is being expanded. By doing so, new insights are being provided as a response to recent research calls (e.g., Yin et al., 2020) on investigating the mediating effect of psychological safety in comparative leadership studies.

Additionally, an employee's goal orientation towards their work also has great potential to increase the likelihood to share knowledge with others (Swift et al., 2010). Depending on whether someone makes learning new skills a central part of work or prefers to demonstrate their performance in order to outmatch others, can enhance or lessen someone's engagement in collaborative behaviors (Matzler & Müller, 2011). While the interplay between goal orientations and knowledge sharing has been documented extensively, scholars note that goal orientations might also play an important moderating role on leadership effects (Zia, 2020). In fact, learning- and performance-orientated individuals might be ideologically more attracted to the learning culture promoted by transformational leadership or the performance culture bolstered by transactional leadership (Marjoribanks & Mboya, 2004; Zia, 2020). Literature on this moderating effect is, however, still sparse (Zia, 2020), even more so in the context of knowledge *donating*.

Thus, this study aims to investigate the conditional effects of goal orientations and psychological safety in order to examine the effects of leadership on knowledge donating from a holistic perspective and provide support to leaders wanting to mitigate said barriers (Law et al., 2017, p. 1492; Nguyen et al., 2019). Specifically, it addresses the question of how transformational and transactional leadership compare in their effects on knowledge donating, and what role psychological safety and goal orientations play in facilitating this outcome. In the following, the theoretical foundations of leadership and knowledge donating are outlined before elaborating on the concepts of psychological safety and goal orientations that constitute the core of this study's research model. The hypotheses derived from the literature were tested by means of a cross-sectional online survey among employees in Austria, the Netherlands, Germany, and other Western countries. The research results yield important implications for both leadership theory and practice.

## 2 Literature review

### 2.1 Leadership and knowledge sharing

#### *2.1.1 A short review of leadership theory and leadership styles*

Since the birth of leadership theory in the 1970s, the definition of the term 'leadership' has been enriched through multiple studies broadening scholars' understandings of a concept often found in politics, education, business, and other contexts (Flauto, 1999, p. 87). In a broader sense leadership can be regarded as the process of influencing a group's or organization's objectives and strategies, its ways of implementing tactics and achieving goals, as well as one's identification with the group or organizational culture (Yukl & Van Fleet, 1992, p. 149). However, depending on the researcher's own lens and chosen context, the definition of leadership may vary. For instance, leadership might be defined as a person's interaction patterns, character traits, or influential and motivational skills (Men et al., 2018, p. 2). Within the organizational context, however, academics generally characterize leadership by two sets of skills; that is, i) managerial

abilities, such as strategic planning and decision-making, and ii) interpersonal communication, which is oriented towards daily interactions and the nurturing of relationships (de Vries et al., 2010, p. 368; McCartney & Campbell, 2006). Depending on the composition of these two sets of skills, various leadership styles can be identified, among which transformational leadership and transactional leadership have become central to the attention of academics (Al Amiri et al., 2020; Arikan, 2020).

Transformational leadership involves establishing an inspirational and shared vision among employees through a strong emotional bond between leaders and followers (Bass & Avolio, 1997; Yukl, 2006). Leaders practicing this style are genuinely interested in the well-being of their followers, want to create a climate of trust, and encourage self-development. Therefore, they often communicate openly with their followers to better understand their aspirations and needs and to be able to adequately support them in fulfilling those (Men, 2014, p. 268). In essence, this leadership style is called transformational, because its objective is to transform employees' concept of self so that they can reach their highest potential (Bass & Avolio, 1997; Jung, 2001). In terms of decision making, transformational leaders are open to different opinions, invite participation in shaping the future, and tend to delegate authority and responsibility to followers (Men & Stacks, 2013). By being compassionate, empowering, and highly interactive they are said to articulate a vision that employees can identify with and gives them a sense of value within the organization (Hackman & Johnson, 2013; Yukl, 2006). As a result, followers raise their own standards to accomplish a shared vision (Jung, 2001, p. 187).

Whereas transformational leadership focuses on the alignment of values between leader and followers, transactional leadership accepts the premise that both parties have their independent individual values and goals that do not have to align (Burns, 2012; Flauto, 1999). In the pursuit of each party fulfilling their individual goals, both engage in an exchange of resources. For example, an employee's good performance may be rewarded with intangible or tangible rewards (Waldman

et al., 1990). It is therefore "not a joint effort for persons with common aims acting for the collective interests of followers" like in transformational leadership, "but a bargain to aid the individual interests of persons or groups going their separate ways" (Burns, 1978, p. 425, as cited in Flauto, 1999, p. 87). Jung (2001, p. 188) explains that leaders practicing transactional leadership recognize their employees' needs and wants and define how these will be met once the given task is well performed. Without this implicit contract and positive reinforcement, subordinates are not expected to add extra effort to their usual workload.

### *2.1.2 The effects of leadership on knowledge donating*

#### 2.1.2.1 Knowledge donating, a sub-concept of knowledge sharing.

Many definitions of knowledge sharing have emerged during the evolution of knowledge theory in the past two decades (Al Amiri et al., 2020, p. 253). The most wildly accepted definition has been coined by Alavi and Leidner (2001, p. 114), who define knowledge sharing as the process by which knowledge is jointly created, acquired, stored, retrieved, and eventually applied. Van Den Hooff and De Ridder (2004) adhere to this definition and offer a framework of knowledge sharing based on interpersonal exchanges within a team. It describes the concept as an interplay of two processes: *knowledge donating*, which represents the likelihood to supply personal intellectual capital to coworkers, and *knowledge collecting*, which involves consulting coworkers to learn new information from them. Due to the framework's strength in operationalizing knowledge sharing, this dual view has often been applied by scholars (De Vries et al., 2010; Le & Lei, 2018; Phong et al., 2018; Son et al., 2020).

Within an organizational context, it can be argued that the act of collecting knowledge from colleagues cannot occur without personal intellectual capital being donated in the first place. Hence, the particular interest of scholars in the contextual factors that motivate or inhibit people to transfer their knowledge to others (Heisig, 2009, Van Den Hooff & De Ridder, 2004). In fact, employees often report that one's own knowledge is a strategic resource and donating it to

someone else is carefully evaluated beforehand due to the fear of losing knowledge power (Iqbal et al., 2022). When employees do decide to donate their expertise, the process of transferring knowledge can be often rather difficult. Explicit knowledge is already codified and therefore easily transferred to colleagues by simple means of communication (Blumentitt & Johnston, 1999). Tacit knowledge, however, is expertise in the form of unconscious practices that seem natural to the ones that own it, yet novel to others. This form of knowledge takes more effort to be articulated verbally or transferred. Thus, the effort of teaching tacit knowledge is often the reason why it is rarely being shared. Considering the associated loss of knowledge power (Iqbal et al., 2022), effort of transfer (Blumentitt & Johnston, 1999), and the fact that 42% of organizational knowledge is tacit (Singh, 2008), special attention needs to be given to the antecedents of knowledge *donating*.

#### 2.1.2.2 The effects of transformational leadership on knowledge donating.

A strong positive link has been found between transformational leadership and knowledge sharing (Al Amiri et al., 2020, p. 258; Berraies & El Abidine, 2019; Le & Lei, 2019; Li et al., 2014). By encouraging employees to participate in the decision-making process and by listening to their input, these leaders animate them to share knowledge. In detail, this can be achieved through the four pillars of transformational leadership: inspirational motivation, intellectual stimulation, individualized consideration, and idealized influence (Avolio et al., 1999; Yin et al., 2020).

Inspirational motivation is characterized by a leader's ability to instill a strong sense of purpose and commitment to a shared mission among followers (Avolio et al., 1999). These leaders can compel employees to shift their focus from self-interest towards a collective concern. Consequently, they are more likely to disclose their knowledge to help achieve a shared mission. Donating personal intellectual capital would be then no longer perceived as voluntary but as a necessity for achieving a collective mission (Yin et al., 2020, p. 12).

Intellectual stimulation encourages followers to develop new skills and challenge traditional beliefs (Avolio et al., 1999). When employees are free to explore different perspectives, they tend to seek their colleagues' opinions and express their own knowledge more openly (Chen & Barnes, 2006; Yin et al., 2020, p. 12; Yukl, 2006).

Individualized consideration reflects a leader's respect, care, and appreciation for each employee (Avolio et al., 1999). It entails listening to individual needs, helping them achieve their potential, offering learning opportunities, and coaching them throughout their journey. According to the theory of reciprocity, people tend to respond to positive behavior by returning the favor. Thus, when employees receive individualized consideration, they tend to reciprocate such benevolence by spending more efforts in work, which in turn can be expressed by donating knowledge to achieve common goals (Yin et al., 2020, p. 13).

Lastly, idealized influence, also called charisma, refers to leaders who are considered most respectful, moral and trustable (Avolio et al., 1999). They greatly inspire followers, create a sense of belongingness, and instill pride in others for being associated with them. As followers strongly identify with these role models, who themselves tend to donate knowledge transparently, they are more likely to imitate these 'model' behaviors (Agyemang et al., 2017; Yin et al., 2020, p. 11).

#### 2.1.2.3 The effects of transactional leadership on knowledge donating.

On the other hand, the relationship between transactional leadership and knowledge donating remains inconclusive. While some scholars find support for a positive effect between both concepts (Baskoro, 2021; Bradshaw et al., 2015; Udin et al., 2022; Ugwu et al., 2020), others argue that only a negative impact can be inferred (Politis, 2002; Suhana et al., 2019). An analysis of the components that comprise transactional leadership, namely contingent reward and management by exception, offers more insight into the underlying mechanisms that can result in positive or negative effects.

Contingent reward is a system of incentives to motivate employees for following their responsibilities and exceeding performance expectations (Bass & Avolio, 1997). These rewards may be presented as words of appraisal, receiving valuable information or resources, monetary incentives, or increased trust and status (Bock & Kim, 2002). Scholars argue that if transactional leaders are able to provide a reward system that is designed towards knowledge sharing, then employees can expect to earn benefits (Bartol & Srivastava, 2002; Bradshaw et al., 2015; Farooq et al., 2018, p. 1545; Jung, 2001, p. 188). In contrast, a study by Politis (2002, p. 193) revealed that rewards were negatively related to knowledge sharing. The scholar explains that when leaders inhibit their employees' freedom of action by rewarding only certain levels of performance with rewards, then this might lower their motivation to donate or collect knowledge. Likewise, Wang et al. (2022) found that too many rewards weaken the motivation to share knowledge.

Management by exception is the second component of transactional leadership and can be expressed in two different forms, *active* or *passive* (Howell & Avolio, 1993). A leader applying active management by exception monitors employees' performance and takes corrective measures before mistakes happen, whereas in passive management by exception leaders intervene only after mistakes have occurred. Therefore, the active form is rather preventive, while the passive form is reactive. Prior evidence indicates that active management by exception is positively correlated with knowledge sharing (Bradshaw et al., 2015; Ugwu et al., 2020, p. 10). As coworkers recognize that a fellow employee is being closely monitored and in need for knowledge to perform well, they might donate the necessary knowledge to help them. In contrast, Politis (2002, p. 193) found that management by exception is not correlated with knowledge sharing. When employees are being monitored that closely, the pressure to perform is high, thus one tries to impress their leader with their expertise and does not want to donate it to colleagues, otherwise the knowledge becomes common and not a tool to impress anymore.

To conclude, transformational leadership exhibits traits that likely invite employees to donate their intellectual capital, whereas transactional leadership has the potential to prompt the opposite. While accounting for the uncertainty of transactional effects, comparative studies indicate that transformational leadership has a significantly stronger impact on knowledge sharing than transactional leadership (Hayat et al., 2015; Novak et al., 2020; Ugwu et al., 2020). In light of these findings, it can be hypothesized that:

**Hypothesis 1:** *The relationship between transformational leadership and knowledge donating is stronger than the relationship between transactional leadership and knowledge donating.*

### *2.2 The role of psychological safety*

#### *2.2.1 The impact of psychological safety on knowledge donating*

In organizational studies, psychological safety has been determined as a key aspect in understanding how individuals collaborate (Edmondson & Lei, 2014), making it a vital notion for interpreting collaborative behaviors like knowledge sharing. Psychological safety describes how safe and comfortable individuals feel within their teams regarding their identity, self-image, status, or career (Edmondson, 1999). For example, employees that perceive no interpersonal threat in their work environment, i.e., no danger of humiliation or rejection by co-workers, are more likely to donate and collect knowledge because it makes them less fearful of negative evaluations (Edmondson & Lei, 2014, p. 36). If their own position is not endangered, for instance by competition among co-workers, then they also tend to engage more in knowledge sharing behaviors. Moreover, scholars explain that faith in a colleague's ability to use information appropriately increases the likelihood of donating knowledge. And if they believe that sharing their knowledge can help the team reach common goals successfully, then their willingness to disclose knowledge increases as well (Kessel et al., 2012).

Given that employees' feelings of insecurity are the main barrier preventing them from exchanging knowledge, previous research has been keen to explore this issue and demonstrated that psychological safety has a positive effect on employees *sharing* their knowledge with others (Kakar, 2018; Kessel et al., 2012; Rivera et al., 2021; Shao et al., 2017). As a result, it is anticipated that psychological safety will play a significant role in *donating* knowledge as well.

### *2.2.2 The mediating role of psychological safety on the relationship between leadership and knowledge donating*

Social information process theory contends that social cues provided by leaders heavily influence how employees perceive their work climate and subsequently behave (Yin et al., 2020, p. 15; Zhou & Pan, 2015). Considering that leaders greatly shape the working climate, it is expected that their leadership style influences behaviors such as knowledge donating via its impact on psychological safety.

In fact, a series of studies conclude that a trusted and respected team leader, as can be found in transformational leadership, facilitates open interpersonal communication and thereby encourages the discussion of ideas without fear of humiliation or rejection (Choi, 2006; Shao et al., 2017; Mehmood et al., 2022; Wang et al., 2005). By emphasizing the importance of relationships and team effort, transformational leaders foster a positive and safe climate for team members. Shao et al. (2017) demonstrated that leaders who instill trust and cooperation rather than competition create an environment in which employees feel safe to express their opinions and exchange knowledge. Moreover, scholars report that the level of interaction among employees with transformational leaders is particularly high, resulting in a safe environment where employees have more opportunities to evaluate their colleagues' ability of using knowledge in case one decides to provide it (Kark & Shamir, 2013; Yin et al., 2020).

Additionally, Yin et al. (2020) confirm that psychological safety positively mediates the relationship between all four pillars of transformational leadership and knowledge *sharing*.

They observed how intellectual stimulation signals employees that it is safe to be different in the present environment and even encourages the expression of ideas without danger of negative consequences. Individualized consideration shows that leaders care for each employee's wellbeing, which indicates that there is little to no risk in communicating honestly. Likewise, idealized influence stresses the importance of equality among employees, which ultimately enhances the perception of psychological safety. Lastly, they found that inspirational motivation increases psychological safety and subsequently knowledge sharing by emphasizing team spirit and shared values. Therefore, in regards to knowledge *donating,* it is proposed that:

**Hypothesis 2:** *Psychological safety mediates the relationship between transformational leadership and knowledge donating.*

In contrast, the relationship between transactional leadership and psychological safety remains once again inconclusive. On one hand prior research shows that this task-oriented management style has a positive effect on psychological safety (Clarke, 2013; Rao-Nicholson et al., 2016; Shen et al., 2015), while on the other hand scholars argue the opposite (Rabiul et al., 2022).

Advocates of the positive effect state that contingent reward positively influences psychological safety because it makes employees feel recognized in terms of their needs and how leaders help fulfill them (Shen et al., 2015). Furthermore, scholars argue that active management by exception is also likely to increase psychological safety because a leader that spends time and effort on monitoring their employees' work shows that they truly care about them (Shen et al., 2015). Thereby, transactional leaders create an unambiguous, predictable and non-threatening climate (Clarke, 2013). Additionally, providing resources and explicit directions for completing tasks is said to promote a clear and consistent environment (Antonakis et al., 2003), which may mitigate the interpersonal risks of donating knowledge to colleagues.

Meanwhile other scholars demonstrate the opposite (Rabiul et al., 2022). In fact, Klotz et al. (2012, p. 622) note that rewards can reduce the perception of psychological safety in the workplace. Performance-rewards add pressure to exceed previous performances, and the pressure of achieving the reward can increase competition with others, thus reducing the level of psychological safety within the team (Klotz et al. 2012), which in turn inhibits the likelihood of giving up intellectual capital that might be advantageous to other coworkers. Moreover, active management by exception can be perceived as controlling and "may create a sense of unsafety and a fear of failure among employees" (Rabiul et al., 2022, p. 16). This perception can in turn lead to detachment, less commitment to work (Dollard & Bakker, 2010) and likely prevent knowledge donating. Similarly, passive management by exception makes employees feel disheartened as their leader is forced to correct their mistakes after they occurred. This tends to discourage employees and thus adversely affects psychological safety (Shen et al., 2015). While acknowledging the potential positive or negative influence of the transactional style on psychological safety, it can be posited that psychological safety acts as a mediator, whose direction still needs to be determined.

**Hypothesis 3:** *Psychological safety mediates the relationship between transactional leadership and knowledge donating.*

## 2.3 The role of goal orientations

### *2.3.1 Goal orientations and knowledge through the lens of social cognitive theory*

The agentic perspective of social cognitive theory postulates that individual agents are important mechanisms that guide human action (Bandura, 2001). These agents are stable intrinsic traits, such as personal goal orientations, that belong to oneself. As such, the theory contends that without setting goals for improving themselves individuals achieve no change in their skillset but only inhibit progress. Notably, the founders of goal orientation theory, Elliott and Dweck (1988), found that individuals exhibit two kinds of goal orientations that predict their progress. People

with a learning goal orientation (LGO) pursue the acquisition of new competences and challenging tasks as they believe in a constant journey of growth. Meanwhile, those with a performance-prove goal orientation (PGO) are predisposed towards demonstrating their know-how as well as outperforming others and thus often rely on positive evaluations from leaders and colleagues.

Existing literature posits that among employees with a LGO the level of knowledge sharing is highest (Kim & Lee, 2013; Shamim et al., 2017). These employees thrive in environments full of challenges and learning opportunities, and they often display a strong willingness to acquire, donate and apply knowledge (Shamim et al., 2017). This attitude is not only reflected towards themselves by purposefully collecting knowledge, but also towards others in a way that they want to transfer their expertise so others can learn too (Matzler & Müller, 2011, p. 320; Swift et al., 2010, p. 387). Therefore, learning oriented people are more likely to teach them to others (Hsu et al., 2007), even though this process may be difficult and time-consuming (Argote et al., 2000).

In contrast, the level of knowledge sharing is decreased among employees with PGO (Matzler & Müller, 2011). Because these individuals want to outperform others, the act of exchanging knowledge is often interpreted as a loss of competitive advantage (Al Amiri et al., 2020). Consequently, they often do not partake in knowledge donating activities. Moreover, they highly value performance standards and benchmarks, whereas knowledge donating might not be perceived as a valuable activity (Matzler & Müller, 2011). Additionally, these individuals strongly focus on short-term achievements rather than long-term success (Sujan et al., 1994). Donating knowledge is, however, time-consuming and considered a long-term process (Argote et al., 2000). Therefore, PGO employees rarely tend to these tasks. Scholars point out that, on the rare occasion that performance-oriented employees do transfer their knowledge, this behavior is most likely due to an opportunity to prove or flaunt their competence in front of others (Swift et al., 2010).

While the interplay between goal orientations and knowledge sharing has been documented extensively, scholars note that LGO and PGO might also play an important moderating role

(Marjoribanks & Mboya, 2004; Zia, 2020). Literature on this moderating effect is, however, still sparse (Zia, 2020), even more so in the context of knowledge donating.

### *2.3.2 The moderating role of goal orientations on the relationship between leadership and knowledge donating*

Elliott and Dweck's concept of goal orientations ideologically aligns with the nature of both leadership styles. Transformational leadership promotes a learning culture so that employees can reach their highest potential, whereas transactional leadership promotes a performance culture with a strong focus on measurable outcomes (Bass & Avolio, 1997). In other words, transformational leadership welcomes mistakes as it is part of the learning curve (Avolio et al., 1999), while transactional leadership is adamant about avoiding mistakes and rewarding only good performances (Howell & Avolio, 1993; Politis, 2002).

In this sense, transformational leadership offers employees with a LGO an environment that supports their intrinsic strive to learn and to help others by donating their knowledge. Therefore, it can be assumed that among employees with a LGO, the positive effect of transformational leadership on knowledge donating is intensified because helping others learn new skills aligns with the promoted transformational values. A transactional environment, however, will be promoting values that are possibly contradictory to those of a learning-oriented person. Nevertheless, their stable and intrinsic motivation to help others learn (Hsu et al., 2007; Matzler & Müller, 2011; Swift et al., 2010) might still result in donating knowledge to colleagues that are being closely monitored by a transactional leader practicing active management by exception or being left unsupported by a transactional leader applying passive management by exception. Consequently, it can be hypothesized that:

**Hypothesis 4:** *An employee's LGO strengthens the likelihood to donate knowledge, especially more in case of transformational leadership than transactional leadership.*

On the other hand, employees with a PGO value performance and deadlines more than the altruistic act of transferring knowledge to others (Matzler & Müller, 2011). A transformational leader stressing the importance of skill enhancement would be thus promoting something unfamiliar, perhaps oppositional, to a person's intrinsic focus on performance. Moreover, a transformational leader usually stresses the importance of a collective mindset, whereas employees with a PGO pursue self-interests (Al Amiri et al., 2020). As a result, the expected positive effect of transformational leadership on knowledge donating would be dampened. Meanwhile, a transactional environment that is adamant about successes would complement the values that stand for a PGO. These employees may even be motivated to perform better because they know what to expect from their leaders and how to receive the positive evaluations that they seek (Al Amiri et al., 2020). Moreover, employees with a PGO exhibit high levels of impression management and will try to gain the favor of transactional leaders by demonstrating their value (Swift et al., 2010), namely a value defined by their knowledge. Consequently, they may be even less incentivized to donate their expertise.

**Hypothesis 5:** *An employee's PGO lessens the likelihood to donate knowledge, especially more in case of transactional leadership than transformational leadership.*

The proposed relational model of leadership and knowledge donating is depicted in Figure 1. In this context, transformational and transactional leadership are regarded as proxy agency factors, psychological safety as a mediator and knowledge donating as the desired outcome, while employees' goal orientations are considered as individual agency factors that may moderate the direct effect. The statistical model of the framework is displayed in Figure 2.

**Figure 1**

*Conceptual model*

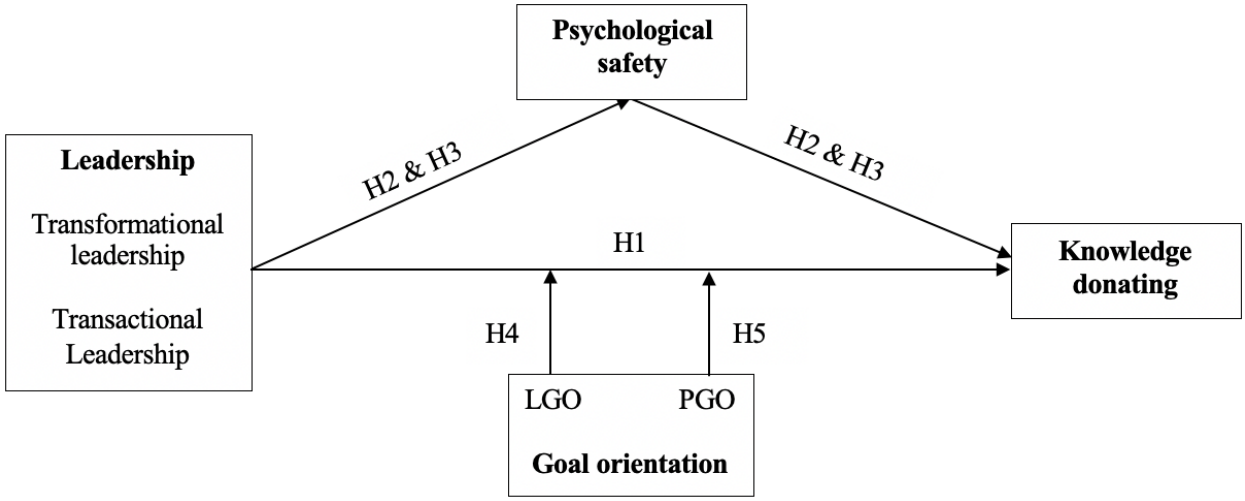
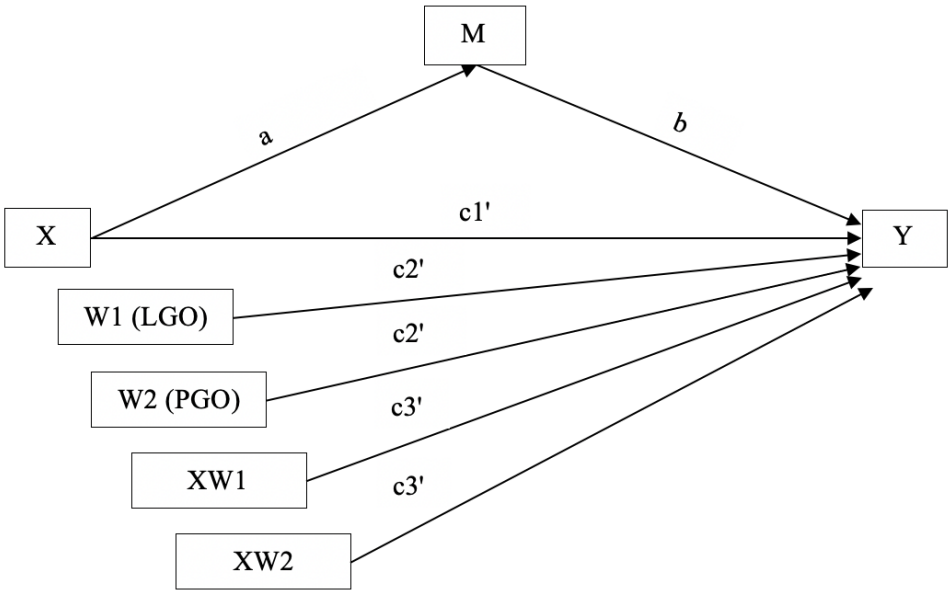



**Figure 2**

*Statistical model*




*Note.* The indirect effect *ab* is the effect of *X* on *Y* through the mediator *M*. The direct effect *c1'* is the partial effect of *X* on *Y* after controlling for *M*. The total effect *c* (not displayed in the statistical model) is the coefficient $c = ab + c'$. It is the coefficient that can be found by fitting a simple regression model ($Y = i + cX$) (Hayes, 2017). The effect *c2'* is the direct effect of the moderator *W* on *Y*. The effect *c3'* is the interaction between *X* and *W*, and defines the moderating effect.

# 3 Method

## 3.1 Research design and data collection

By the means of an online cross-sectional survey this study's goal was to quantitatively examine a framework whose constituents are already well explored, yet whose pathways as proposed in Figure 1 remain unknown in the context of knowledge *donating*. Over two weeks a short web-based survey was sent to friends, family and colleagues in Austria and the Netherlands and then forwarded by them to their private and professional networks. The criterion for participation was to be fully or part-time employed or to be a freelancer within an organizational team. Moreover, empirical data was collected from employees across Europe and the USA by publishing the survey to online forums, such as Facebook, Reddit and LinkedIn groups. Additionally, two close contacts whose LinkedIn accounts have over 500 followers each shared the survey on their profile and helped distribute it across their companies.

In total, 287 interviews were recorded after two weeks, among which 184 employees fully returned the questionnaire, which is a completion rate of approximately 64%. After removing the entries with incomplete information or invalid data, a sample size of 167 respondents was obtained for data analysis. The questionnaire explicitly stated full anonymity and confidentiality of the provided data in accordance with ethical guidelines of the Austrian Research Organization Act DSGVO/FOG to ensure participants' rights for data protection. Before proceeding with the questionnaire participants were presented with the guidelines and declared their informed consent.

## 3.2 Sample

The sample consisted of 51.8% females, 86% held a college or university degree, and the majority of respondents (83%) was between 19 and 34 years old. Furthermore, 53.4% were employed full-time, 40.6% part-time, and 6% worked as freelancers within organizational teams. More than 75% had one to ten years of relevant work experience, while 24.8% had 11 to 44 years. On average, the respondents had four employers (SD = 3.5). In detail, 69.7% had one to four

employers and 30.3% had five to 25 employers. Three main work fields could be detected, with 34.1% working in sciences, technology and IT, 14% in communications and 11.6% in business management and administration. Finally, 47% of the respondents were Dutch, 22% Austrian, 7.3% German, and 23.7% were from other European and American states.

### 3.3 Measurements

All measurements were taken from previous well-established scales, whose reliabilities have been refined by scholars over the last two decades, and questions were asked from the perspective of employees rating their supervisor. The two types of leadership, *transformational and transactional*, were measured using the Multifactor Leadership Questionnaire Rater Form (5X- Short) by Avolio and Bass (2004). The transactional scale entails 12 items along three dimensions. The transformational scale is composed of 16 items along 4 dimensions. Respondents measured the frequency at which they observed the described items on a 5-point Likert-type scale ranging from 1 (not at all) to 5 (frequently, if not always). To estimate the dependent variable, a scale by De Vries et al. (2006) was adopted. The scholars attribute four items each to knowledge collecting and knowledge donating. For this study the four items of knowledge donating were selected and measured on a 6-point Likert-type scale, assessing agreeableness from 1 (strongly disagree) to 6 (strongly agree).

The mediating effect of psychological safety was estimated with a 6-item scale for team psychological safety by Edmondson (1999). Respondents indicated the accuracy of the presented items on a 6-point Likert-type scale ranging from 1 (very inaccurate) to 6 (very accurate). Employees' goal orientations were assessed with Van de Walle's (1997) 9-item scale for learning and performance-prove goal orientations along a 6-point Likert-type scale, ranging from 1 (strongly disagree) to 6 (strongly agree). Variables, such as age, gender, educational background, work experience, and nationality, are found to have potential influences on knowledge sharing as prior research suggests (Nguyen, 2021; Yin et al., 2020). Therefore, the impact of these variables

as well as employment status, number of employers, and work field were controlled for in this study. Additional information on the item wordings can be found in Table 1, while the full questionnaire is enclosed in Appendix A.

### 3.4 Data analysis procedure

First, the data was inspected regarding outliers, normality and common method bias using SPSS v. 29. Next, construct reliability and validity were assessed through factor analysis, Cronbach's alpha, composite reliability, and average variance extracted. Before starting with the path analysis, the basic assumptions of normality, linearity, uncorrelatedness of residuals, multicollinearity, and homoscedasticity were examined. Finally, Hayes' mediation model 5 (Hayes, 2017) was executed using PROCESS v4.3 for SPSS and simple regression analysis was employed.

## 4 Results

### 4.1 Data inspection

The data were free from missing values, and outliers were detected using casewise diagnostics for cases with residuals greater than three standard deviations. To assess the normality of the data, histograms and the normal probability plot were examined. The histograms suggest normal distribution, however, some items were moderately negatively skewed. For medium-sized samples ($50 < N < 300$), the absolute z-value of kurtosis should be under 3.29 (Kim, 2013). In fact, all items' z-scores followed this recommendation. From the Normal P-P plots it can be concluded that the data appears to be normally distributed as it follows the diagonal line closely and shows a linear pattern.

To verify a potential common method bias associated with the research method, Harman's single-single factor test was used (Podsakoff et al., 2003). An unrotated exploratory factor analysis was run by constraining the number of factors to one. The total variance for a single factor should

be less than 50%. In fact, the single factor solution explained 24% of the variance in the data. This result indicates that common method bias was not an issue.

### 4.2 Construct reliability and validity

Factor analysis was performed following the principal component solution with a varimax rotation with Kaiser normalization (Abdi & Williams, 2010). For the construct of transformational leadership, an eigenvalue of greater than one and a review of the scree plot produced a two-factor solution. The factor correlations ranged from 0.69 to 0.79 for items developed for factor 1 and describe a transformational leaders' abilities in intellectual stimulation and individualized consideration. For factor 2 the correlations ranged from 0.67 to 0.74 and correspond to inspirational motivation and idealized influence. The subsequent reliability tests (Nunnally, 1978) suggests that Cronbach's alpha could be improved from $\alpha = 0.904$ to $\alpha = 0.908$ by deleting one item from factor 2. For the construct of transactional leadership, a three-factor solution could be determined. The first factor describes active management by perception, the second rewards, and the third passive management by perception. The subsequent reliability test suggests that Cronbach's alpha could be improved from $\alpha = 0.58$ to $\alpha = 0.75$ by deleting factor 2 (rewards) and one item from factor 3. The resulting seven items were then retained for further analysis.

The four items of knowledge donating loaded on two factors and can be provisionally titled as factor 1 'updating colleagues' and factor 2 'donating newly acquired knowledge'. The subsequent reliability test suggests that Cronbach's alpha ($\alpha = 0.76$) could not be improved with further item deletion. Likewise, a 5-item scale was developed to assess psychological safety in this study. The PCA produced one factor and its reliability is good and acceptable at $\alpha = 0.82$. The factor analysis for the final construct, goal orientations, produced two factors. As expected, these correspond to LGO and PGO. After deleting one item from the factor PGO, Cronbach's alpha lied at $\alpha = 0.76$.

Additionally, composite reliability (CR) was used to further test the reliability of the constructs. As table 1 shows, CR for all constructs ranged between 0.87 and 0.95, thus well above the recommended threshold of 0.7 (Nunnally, 1978). Convergent validity was measured using the average variance extracted (AVE) and the values were between 0.52 and 0.83, thus greater than 0.5 as recommended by Fornell and Larcker (1981). Table 1 presents a summary of factor loadings, Chronbach's alpha, CR, and AVE, while Appendix B shows a detailed calculation of the latter two measures. To ascertain discriminant validity, the correlations between the constructs were compared to the square root values of AVE (Fornell & Larcker, 1981). As seen in Table 2, all values are smaller than the square root values of AVE, thus discriminant validity is confirmed.

**Table 1**

*Item factor loading and construct reliability and validity.*

| Constructs/Items | λ | α | CR | AVE |
|---|---|---|---|---|
| *Transformational leadership* | | 0.908 | 0.918 | 0.728 |
| [Please judge how frequently each statement fits the person you are describing. (Scale from 1 "not at all " to 5 "frequent, if not always")] | | | | |
| L001_02 | deleted | | | |
| L001_05 | deleted | | | |
| L001_06 | deleted | | | |
| L001_12 | 0.690 | | | |
| L002_01 | 0.767 | | | |
| L002_04 | deleted | | | |
| L002_08 | deleted | | | |
| L002_09 | 0.723 | | | |
| L002_10 | 0.793 | | | |
| L002_11 | 0.760 | | | |
| L001_07 | 0.674 | | | |
| L001_10 | 0.684 | | | |
| L001_11 | 0.703 | | | |
| L002_06 | 0.735 | | | |
| L002_12 | 0.742 | | | |
| L002_14 | deleted | | | |
| *Transactional leadership* | | 0.748 | 0.880 | 0.552 |
| L001_04 | 0.75 | | | |
| L002_05 | 0.825 | | | |
| L002_07 | 0.777 | | | |
| L001_09 | 0.661 | | | |
| L001_14 | 0.645 | | | |
| L002_02 | 0.782 | | | |

| (continued) Constructs/Items | λ | α | CR | AVE |
|---|---|---|---|---|
| L001_01 | deleted | | | |
| L001_03 | deleted | | | |
| L001_08 | deleted | | | |
| L001_13 | deleted | | | |
| L002_03 | deleted | | | |
| L002_13 | deleted | | | |
| *Knowledge donating* | | 0.759 | 0.951 | 0.828 |
| [Please read the following statements and indicate how much you agree with them. (Scale from 1 "strongly disagree" to 6 "strongly agree")] | | | | |
| I consider it important that my colleagues know what I am doing. | 0.908 | | | |
| I regularly inform my colleagues of what I am working on. | 0.930 | | | |
| When I have learned something new, I make sure my colleagues learn about it too. | 0.929 | | | |
| I share information that I acquired with my colleagues. | 0.872 | | | |
| *Psychological safety* | | 0.822 | 0.867 | 0.523 |
| [Please read the following statements about your team's dynamics and indicate how accurate they are. (Scale from 1 "very inaccurate" to 6 "very accurate")] | | | | |
| If you make a mistake in this team, it is often held against you. | 0.770 | | | |
| Members of this team are able to bring up problems and tough issues. | 0.717 | | | |
| People on this team sometimes reject others for being different. | 0.735 | | | |
| It is safe to take a risk on this team. | 0.752 | | | |
| It is difficult to ask other members of this team for help. | 0.605 | | | |
| No one on this team would deliberately act in a way that undermines my efforts. | deleted | | | |
| Working with members of this team, my unique skills and talents are valued and utilized. | 0.742 | | | |
| *Goal orientations* | | 0.761 | 0.928 | 0.619 |
| [Please read the following statements about work attitudes and indicate how much you agree with them. (Scale from 1 "strongly disagree" to 6 "strongly agree")] | | | | |
| I am willing to select a challenging work assignment that I can learn a lot from. | 0.833 | | | |
| I often look for opportunities to develop new skills and knowledge. | 0.784 | | | |
| I enjoy challenging and difficult tasks at work where I will learn new skills. | 0.865 | | | |
| For me, development of my work ability is important enough to take risks. | 0.780 | | | |
| I prefer to work in situations that require a high level of ability and talent. | 0.634 | | | |
| I am concerned with showing that I can perform better than my coworkers. | deleted | | | |
| I try to figure out what it takes to prove my ability to others at work. | 0.739 | | | |
| I enjoy it when others at work are aware of how well I am doing. | 0.784 | | | |
| I prefer to work on projects where I can prove my ability to others. | 0.851 | | | |

*Note*. λ = factor loading; α = Cronbach's alpha; CR = composite reliability; AVE = average variance extracted. Due to copyright issues the item wordings for transformational and transactional leadership are not displayed (Avolio & Bass, 2004).

**Table 2**

*Means, standard deviations, and discriminant validity values.*

| | *M* | *SD* | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|---|---|
| (1) TFL | 3.43 | 0.89 | *0.73* | | | | | |
| (2) TAL | 2.51 | 0.77 | -0.34** | *0.74* | | | | |
| (3) KD | 4.70 | 0.91 | 0.23** | 0.02 | *0.91* | | | |
| (4) PGO | 4.16 | 1.13 | -0.04 | 0.10 | 0.12 | *0.79* | | |
| (5) LGO | 4.89 | 0.79 | 0.42** | -0.13 | 0.28** | 0.18* | *0.78* | |
| (6) PS | 4.66 | 0.98 | 0.60** | -0.45** | 0.26** | -0.10 | 0.35** | *0.72* |

*Note. D*iscriminant validity values are displayed diagonally and italicized, construct correlations are displayed below the diagonal; * $p < 0.05$, **$p < 0.01$; TFL = transformational leadership; TAL = transactional leadership; KD = knowledge donating; PGO = performance-prove goal orientation; LGO = learning goal orientation; PS = psychological safety.

### 4.3 Path analysis

#### *4.3.1 Assumptions*

After having established the constructs for this study, assumptions for regression analysis were examined. Outliers were detected once again using Mahalanobis distances, Cook's distances and leverage values (Kannan & Manoj, 2015). Cases violating two or more of these three measures were excluded from further analysis. In total, five outliers were eliminated, resulting in N = 162 valid cases. Tests to see if the data met the assumption of collinearity showed that multicollinearity was not a concern (TFL, Tolerance = 0.62, VIF = 1.61; TAL, Tolerance = 0.80, VIF = 1.25; PGO, Tolerance = 0.94, VIF = 1.06; LGO, Tolerance = 0.77, VIF = 1.29; PS, Tolerance = 0.60, VIF = 1.68). Moreover, the uncorrelatedness of residuals was verified using the Durbin-Watson

test (Durbin & Watson, 1971; Harvey, 1990; Uyanto, 2020, p. 120). Harvey (1990) notes that the Durbin-Watson value should lie close to $d = 2$. The data met this assumption with a Durbin-Watson value of $d = 2.15$. The histogram of standardized residuals indicated that the data contained approximately normally distributed errors, as did the normal probability plot of standardized residuals, which showed points close to the line. The scatterplot of standardized predicted values showed that the data met the assumptions of homoscedasticity and linearity. The respective tables and plots can be found in Appendices C, D, E and F.

### *4.3.2 Mediated and moderated paths*

Four moderated mediation models were executed with PROCESS v4.3 for SPSS using the bootstrapping method with bias-corrected confidence estimates at 5000 resamples (Hayes, 2017). The applied version is the PROCESS model 5, wherein a moderating and mediating effect are examined simultaneously, using conditional process modeling.

In the case of transformational leadership and employees with LGO (model (a) in Table 3), the data revealed a positive and significant indirect effect of transformational leadership on knowledge donating through psychological safety ($\beta = 0.14$, 95% CI [0.03 to 0.25]). In detail, transformational leadership had a positive effect on psychological safety ($\beta = 0.59$, $p < 0.001$), which in turn positively influenced knowledge donating ($\beta = 0.23$, $p < 0.01$). In the case of transformational leadership and employees with PGO (model (b) in Table 3), the data revealed once again a significantly positive indirect effect through psychological safety ($\beta = 0.17$, 95% CI [0.07 to 0.28]). In detail, transformational leadership had a positive effect on psychological safety ($\beta = 0.59$, $p < 0.001$), which in turn positively influenced knowledge donating ($\beta = 0.28$, $p < 0.001$). Thus, the mediating effect of psychological safety predicted in hypothesis 2 can be confirmed for both models of transformational leadership. These results are visualized in Figure 3.

Additionally, upon testing non-hypothesized effects it was found that individualized consideration had the strongest positive indirect impact on knowledge donating via psychological

safety (β = 0.16, 95% CI [0.07 to 0.26]). Information on the other dimensions of transformational leadership can be found in Appendix G.

**Table 3**

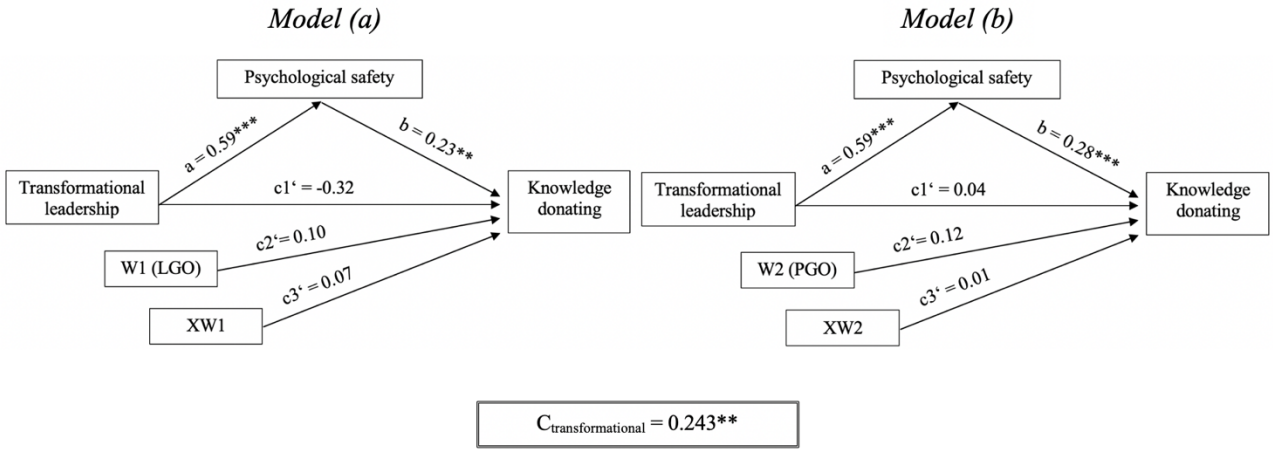
*Results of the transformational moderated mediation models (a) and (b)*

| | Model (a) | | | | Model (b) | | | |
|---|---|---|---|---|---|---|---|---|
| | X: Transformational leadership | | | | X: Transformational leadership | | | |
| | M: Psychological safety | | | | M: Psychological safety | | | |
| | W1: LGO | | | | | | | |
| | | | | | W2: PGO | | | |
| | Y: Knowledge donating | | | | Y: Knowledge donating | | | |
| Path | Coefficient | BootSE | Sig. | Bootstrap, 95% CI | Coefficient | BootSE | Sig. | Bootstrap, 95% CI |
| a (X -> M) | 0.5907 | 0.0802 | 0.0000 | 0.4293; 0.7425 | 0.5907 | 0.0783 | 0.0000 | 0.4313; 0.7409 |
| b (M -> Y) | 0.2294 | 0.0894 | 0.0049 | 0.0515; 0.4036 | 0.2789 | 0.0860 | 0.0008 | 0.1138: 0.4453 |
| c1' (X -> Y) | -0.3229 | 0.5053 | 0.4218 | -1.2111; 0.7469 | 0.0399 | 0.2693 | 0.8872 | -0.5463; 0.5156 |
| Indirect effect | 0.1355 | 0.0560 | | 0.0295; 0.2512 | 0.1648 | 0.0545 | | 0.0651; 0.2758 |
| c2' (W -> Y) | 0.0967 | 0.3856 | 0.7298 | -0.5904; 0.9047 | 0.1183 | 0.2497 | 0.6177 | -0.4146; 0.5842 |
| c3' (interaction XW) | 0.0645 | 0.1026 | 0.4210 | -0.1509; 0.2454 | 0.0093 | 0.0631 | 0.8830 | -0.1099; 0.1428 |

*Notes*. Process model 5 does not include a measure of total effect (Hayes, 2017). The control variables did not show any significant effects.

**Figure 3**

*Statistical models for transformational leadership*




*Note*. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

When assessing the effects of transactional leadership among learning-oriented employees (model (c) in Table 4), a significant and negative indirect effect through psychological safety could be observed (β = -0.16, 95% CI [-0.27 to -0.06]). As suspected, transactional leadership had a

negative effect on psychological safety (β = -0.52, p < 0.001) and psychological safety had a significantly positive effect on knowledge donating (β = 0.30, p < 0.001). Values for path *a* indicate that transactional leadership significantly decreased psychological safety, and values for path *b* show that a low psychological safety was associated with low levels of knowledge sharing. In the context of transactional leadership and performance-oriented employees (model (d) in Table 4), a significantly negative indirect effect through psychological safety remained (β = -0.21, 95% CI [-0.32 to -0.12]). In detail, transactional leadership had a negative effect on psychological safety (β = -0.52, p < 0.001) and psychological safety had a significantly positive effect on knowledge donating (β = 0.40, p < 0.001). Therefore, the mediating effect of psychological safety predicted in hypothesis 3 can be confirmed for both models of transactional leadership. In fact, the results show a negative mediation.

Additionally, upon testing non-hypothesized effects it was found that active management by exception had the strongest negative indirect impact on knowledge donating via psychological safety (β = -0.15, 95% CI [-0.25 to -0.08]). Information on the other dimensions of transactional leadership can be found in Appendix G.

**Table 4**

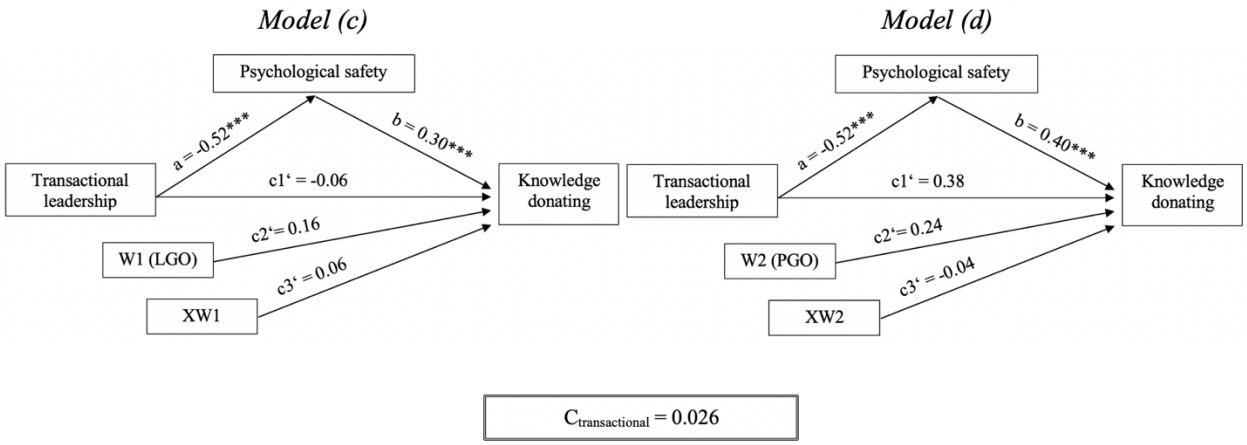
*Results of the transactional moderated mediation models (c) and (d)*

| | Model (c) | | | | Model (d) | | | |
|---|---|---|---|---|---|---|---|---|
| | X: Transactional leadership | | | | X: Transactional leadership | | | |
| | M: Psychological safety | | | | M: Psychological safety | | | |
| | W1: LGO | | | | | | | |
| | | | | | W2: PGO | | | |
| | Y: Knowledge donating | | | | Y: Knowledge donating | | | |
| Path | Coefficient | BootSE | Sig. | Bootstrap, 95% CI | Coefficient | BootSE | Sig. | Bootstrap, 95% CI |
| a (X -> M) | -0.5191 | 0.0870 | 0.0000 | -0.6890; -0.3483 | -0.5191 | 0.0848 | 0.0000 | -0.6849; -0.3488 |
| b (M -> Y) | 0.2988 | 0.0849 | 0.0001 | 0.1326; 0.4607 | 0.4032 | 0.0758 | 0.000 | 0.2567; 0.5559 |
| c1' (X -> Y) | -0.0606 | 0.5854 | 0.9079 | -1.1009; 1.2119 | 0.3803 | 0.3040 | 0.2060 | -0.1667; 1.0215 |
| Indirect effect | -0.1551 | 0.0523 | | -0.2684; -0.0618 | -0.2093 | 0.0519 | | -0.3205; -0.1159 |
| c2' (W -> Y) | 0.1599 | 0.2948 | 0.5629 | -0.3792; 0.7826 | 0.2355 | 0.1657 | 0.1540 | -0.0835; 0.5750 |
| c3' (interaction XW) | 0.0557 | 0.1119 | 0.5678 | -0.1874; 0.2578 | -0.0396 | 0.0703 | 0.5711 | -0.1864; 0.0903 |

*Notes*. Process model 5 does not include a measure of total effect. The control variables did not show any significant effects.

**Figure 4**

*Statistical models for transactional leadership*




*Note*. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

Hypothesis 4 postulated that an employee's LGO strengthens the likelihood to donate knowledge, especially more in case of transformational leadership than transactional leadership. The interaction values in model (a) (β = 0.07, p = 0.42) and model (c) (β = 0.06, p = 0.57) demonstrate that this is not the case since a LGO had no significant impact on the direct relationship no matter the leadership style. Thus, hypothesis 4 is rejected. Hypothesis 5 stated that an employee's PGO lessens the likelihood to donate knowledge, especially more in case of transactional leadership than transformational leadership. Likewise, this effect is not confirmed as there were no moderating effects to be observed in model (b) (β = 0.01, p = 0.88) or model (d) (β = -0.04, p = 0.57). Therefore, hypothesis 5 is rejected as well. It should be noted that not only did the two types of goal orientations have no moderating effects, they also did not act as independent variables influencing knowledge donating in any model ((a) β = 0.10, p = 0.73; (b) β = 0.12, p = 0.62; (c) β = 0.16, p = 0.57; (d) β = 0.24, p = 0.14).

Yet, when comparing the models with learning-oriented employees (models (a) and (c)) to the models with performance-oriented employees (models (b) and (d)), the indirect effect is interestingly slightly stronger in case of performance-oriented employees; especially the

coefficient from psychological safety to knowledge donating is higher ((b) $\beta = 0.28$, $p < 0.001$); (d) $\beta = 0.40$, $p < 0.001$). This suggested a possible moderating effect of goal orientations on the *b* path, which was later tested using PROCESS model 14. However, the results did not yield any new insights.

### *4.3.3 Total effect*

Hypothesis 1 postulated that the relationship between transformational leadership and knowledge donating is stronger than the relationship between transactional leadership and knowledge donating. As the previous analysis showed, a full mediation through psychological safety exists, thus the total effect *c* needs to be assessed since this effect describes the relationship between *X* and *Y* while acknowledging the existence of *M* (Hayes, 2017). The direct effect *c1'* cannot be used to assess this hypothesis because it controls for *M*.

As Hayes (2017) notes, the total effect *c* is only displayed in PROCESS models 4, 6, 80, 81 and 82. When using other models, such as PROCESS model 5, the coefficient can be found by fitting a simple regression model. Therefore, two linear regression analyses at 1,000 bootstraps with 95% confidence were used to test hypothesis 1. As seen in Table 5, the results of the first regression indicate that transformational leadership explained 5.7% of the variance ($R2 = 0.057$, $F(1,160) = 10.719$, $p= 0.001$). It was found that transformational leadership significantly but only weakly predicted knowledge donating among employees ($\beta = 0.243$, $p = 0.003$). Hence, it can be noted that the total effect is $c_{transformational} = 0.243$ (see Figure 3). The results of the second regression indicated that transactional leadership did not explain the variance in knowledge donating ($R2 = -0.006$, $F(1,160) = 0.091$, $p = 0.763$, $\beta = 0.026$). Consequentially, it can be noted that the total effect $c_{transactional} = 0.026$ is insignificant (see Figure 4). The control variables age, gender, educational background, work experience, nationality, employment status, number of employers, and work field did not show any significant impacts.

To conclude, the effect of transformational leadership is stronger than the effect of transactional leadership as transformational leadership explains 5.7% of the variance in knowledge donating. However, due to this weak explanatory power, hypothesis 1 is regarded as only partially accepted.

**Table 5**

*Results of the linear regression analysis*

| Relationships | Adjusted R Square | Beta | SE | F | Sig. (2-tailed) | 95% Confidence Interval Lower | 95% Confidence Interval Upper |
|---|---|---|---|---|---|---|---|
| TFL → KD | 0.057 | 0.243 | 0.74 | 10.719 | 0.003 | 4.271 | 5.165 |
| TAL → KD | -0.006 | 0.026 | 0.087 | 0.091 | 0.754 | -0.148 | 0.187 |

*Note*. TFL = transformational leadership; TAL = transactional leadership; KD = knowledge donating.

## 5 Discussion

### 5.1 Discussion of results

The present study examined how transformational and transactional leadership compare in their effects on knowledge donating with regard to psychological safety and goal orientations. Previous studies have confirmed the relationship between the two leadership styles and knowledge *sharing* (Ugwu et al., 2020), but their impact specifically on knowledge *donating* as well as the psychological mechanisms through which knowledge donating is being achieved remained unclear. This study attempted to bridge this gap by developing a model exploring the strength and direction of these relationships.

Consistent with scholars' work on knowledge sharing (Hayat et al., 2015; Novak et al., 2020; Ugwu et al., 2020), this study revealed that transformational leadership has a stronger effect

on knowledge donating than transactional leadership. In fact, transformational leadership was found to have a significantly positive effect on knowledge donating, as previous research in the field of knowledge sharing suggests (Al Amiri et al., 2020, p. 258; Berraies & El Abidine, 2019; Le & Lei, 2019; Li et al., 2014; Shariq et al., 2019). This demonstrates that a supportive management style that strives to intellectually stimulate and inspire its employees with a shared vision is conductive towards knowledge disclosure. By encouraging employees to participate in decision-making and by listening to their input, transformational leaders animate them to donate their knowledge. As a matter of fact, this paper identified psychological safety as a key mechanism for facilitating this outcome. It shows that transformational leadership encourages open interpersonal communication without fear of humiliation and thereby creates a safe and trusted environment (Shao et al., 2017). The results indicate that as transformational leadership increases by one unit, psychological safety increases by 0.59 units, which in turn encourages employees to donate more knowledge. Interestingly, the dimension 'individual consideration' contributed most to the observed indirect effect, contrary to findings by Yin et al. (2020, p. 25), who detected that 'intellectual stimulation' was the strongest predictor of knowledge sharing through psychological safety.

On the other hand, transactional leadership was found to have no total effect on the dependent variable, despite literature suggesting otherwise (Baskoro, 2021). Therefore, this study can neither confirm nor reject the conclusions made by scholars about the positive and negative effects of transactional leaders on knowledge sharing (Politis, 2002; Suhana et al., 2019). Nonetheless, scholars argue that even in case of an insignificant total effect the analysis of indirect and direct effects is imperative and shall not be cancelled out (Hayes 2009; MacKinnon et al., 2000; Rucker et al., 2011, p. 368; Zhao et al., 2010). In fact, this study makes an important contribution to current literature by observing that psychological safety fully mediated the relationship between transactional leadership and knowledge donating. As transactional leadership

increases by one unit, psychological safety decreases by 0.52 units. Consequentially, a low psychological safety leads to a low level of knowledge donating. In other words, by closely monitoring or not offering any support, transactional leaders actually reduce the level of psychological safety among employees and discourage collaborative behaviors such as knowledge donating. Notably, active management by exception accounted most for the observed negative indirect effect. As Rabiul et al. (2022, p. 16) suggest this might be because active management by perception is often perceived as controlling and raises the pressure to perform. Thus, competition among colleagues increases, leading to an unsafe environment, in which employees are reluctant to give up their knowledge power. These insights add to the current debate on transactional leadership and support advocates of its negative effect on psychological safety (Klotz et al., 2012; Rabiul et al., 2022; Shen et al., 2015).

Data further revealed that the hypothesized moderating effects of goal orientations did not play a significant role. At the same time, they did not act as independent variables influencing knowledge donating, although scholars argue the opposite (Kim & Lee, 2013; Matzler & Müller, 2011; Shamim et al., 2017), nor did they moderate any other path of the framework. Yet, when comparing the models with learning-oriented employees to the models with performance-oriented employees, differences in effects can be observed. It is therefore possible, that goal orientations act in a hidden way, that needs to be yet uncovered.

Furthermore, the sample was mostly comprised by Generations Z and Y (up to 42 years old in 2023) (Gabrielova & Buchko, 2021, p. 489). Consequentially, the results imply that transformational leadership is the better strategy for providing psychological safety to a workforce that is mostly made up of these two generations. Since Generation Y already represents 37% of today's workforce (Mearian, 2022, para.4) and Generation Z will comprise 27% of workers by 2025 (World Economic Forum, 2022, para. 1), the findings are representative of the majority of

today's workforce and thus contribute to a more nuanced understanding about leadership effects on today's staff.

### 5.2 Practical implications

The findings also have important implications for leadership practices and organizational success. In an era where organizations are trying to outmatch competitors with their innovations and highly knowledgeable workforce, the management of a company's knowledge economy has become a crucial internal asset (Wang & Ahmed, 2003). Ensuring appropriate leadership that addresses the psychological needs of employees should be a priority in organizations in order to facilitate and maintain a constant flow of knowledge. Judging from the results of this study, a leadership style lacking in consideration for personal needs and aspirations can severely compromise employees' perception of psychological safety within the company and likely lead to less knowledge donating. Therefore, organizations are encouraged to implement transformational leadership training programs to enhance followers' trust in their leaders and help place psychological safety at the heart of employees' work environment. The associated effects are multifold as scholars found that psychological safety also positively influences job satisfaction (Moin et al., 2021), problem-solving skills (Carmeli et al., 2014), team learning (Edmondson, 1999), organizational performance (Huang et al., 2008), commitment (Wołowska, 2014), and team performance (Kim et al., 2020).

Hence, internal communication practitioners must act as coaches for managers in order to provide these psychological benefits to employees and economic benefits to the organization. While transformational leadership is found to provide a better knowledge economy, the true challenge for professionals lies in helping leaders, that are not textbook-transformational, create psychologically safe environments as a foundation on which knowledge management processes can be built.

### 5.3 Limitations and future research

This study also has limitations due to the chosen method and other external factors that give rise to further research. The results may suffer from self-report bias as employees were asked to evaluate their superior's leadership style, which might not accurately reflect their true behavior. Thus, findings need to be interpreted in the context of an employee's perceptions of a superior's leadership style. By comparing data collected from employees to data collected from superiors themselves, a more accurate indication of their leadership style could be obtained. Moreover, respondents were asked to report their knowledge donating behaviors, possibly leading to socially desirable responses such as being a collaborative team member that shares knowledge.

Another limitation is the analysis procedure used. PROCESS analysis relies on OLS regression and is an observed-variable modeling tool. One of the tool's disadvantages is its sensitivity to bias in estimating effects (Hayes et al., 2017). This bias can be reduced through high measurement reliability, thus minimizing the random measurement error. In fact, the latent variables of this framework have been measured through observed variable proxies and the resulting constructs showed high reliability. Still, perfect measurement reliability cannot be assumed, hence, the estimates of indirect effects could be biased to some degree. To help manage these effects, structural equation modeling could be employed in the future (Hayes et al., 2017, p. 4).

Furthermore, an employee's perception of leadership style can be skewed by events that recently transpired. These might have enhanced their sensitivity to certain items of the questionnaire and result in different scores had they been asked a few weeks earlier. Additionally, knowledge donating can be a long-term process that happens over time and involves various steps. A multiple wave study extending for several weeks would be required to fully capture conditional effects.

Because mediation analysis especially in combination with moderators necessitates larger samples sizes (Hayes, 2017), this study might have suffered from its medium sized sample and thus could not yield significant explanations for the proposed moderating effects. Nevertheless, differences in effects could be observed between the models with learning-oriented employees and the models with performance-oriented employees. Thus, future research is encouraged to further test these moderators with bigger sample sizes.

Most respondents were from Austria, the Netherlands, Germany, and other Western countries. Consequentially, inferences can only be made about Western cultures. According to Hofstede (2007), Western countries tend to be highly individualistic and success-oriented, whereas Eastern countries are rather collectivistic and team-oriented. Because scholars report that the effect of culture on leadership and psychological safety can be significant (Edmondson & Lei, 2014; Nguyen, 2021), future studies are encouraged to directly compare data collected from the West to the East.

Finally, future research could also consider the effect of a recipient's professional ability on the doner's willingness to share knowledge, whether transformational leadership affects the likelihood to share knowledge more through personal identification with the leader or social identification with the team, or how the trend toward individualization and remote work could necessitate an adaption of transformational leadership traits in an increasingly digital world.

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# Appendix A

## Questionnaire

Page 1: Introduction

Welcome!

Thank you for wanting to participate in my survey on the effects of leadership styles.

This is a research project for my master thesis in the master's program Communication Science at the University of Vienna.

The survey will take you about 8 minutes of your time and is targeted towards employees. There are no right or wrong answers, and of course, your privacy is guaranteed as the questionnaire is anonymous.

In case you have questions, feel free to contact me via e-mail at: *e-mail deleted from appendix*

Page 2: Informed consent

*Before you start with the questionnaire, please take time to carefully read the following information about your rights as a participant. After that, I will ask you to declare your consent for your participation in this study.*

1. Your participation is voluntary and anonymous.
2. You can refuse to participate at any time, without having to give a reason, and withdraw from the questionnaire once the study has already started
3. No questions will be asked regarding your name or the name of your employer (in case you are employed).
4. It is impossible to associate any of the collected data with your person. If you still wish to receive information about your data after the survey, please write me an e-mail at: *e-mail deleted from appendix.*
5. Your answers will be treated confidentially and will be only used for scientific purposes.
6. Your participation starts when you give your informed consent below and ends with the completion of the questionnaire. I kindly ask you to answer the questions honestly and to the best of your knowledge.

*To begin with the survey, please confirm that you have been thoroughly informed about your rights, and declare your consent.*

- I was informed about my participation rights and want to proceed.
- I don't want to participate.

Page 3: Employment status (filter question)

*Which of the following categories describes your employment status?*

- Employed, full time
- Employed, part-time

- Self-employed
- Freelancer
- Not employed, looking for work
- Not employed, NOT looking for work
- Retired
- Disabled, not able to work
- Other

Pages 4 & 5: Leadership styles

*For this part of the questionnaire, please think of the person you consider your immediate supervisor or leader.*
*Please judge how frequently each statement fits the person you are describing.*

[Due to copyright issues the entire MLQ instrument may not be included in academic publications, such as this thesis. However, the following three sample items may be included.]

*The person I am rating....*

- Talks optimistically about the future.
- Spends time teaching and coaching.
- Avoids making decisions.

Page 6: Knowledge donating

*The following sections entail questions about yourself and your interactions with your colleagues.*
*Please read the following statements and indicate how much you agree with them.*

- When I have learned something new, I make sure my colleagues learn about it too.
- I share information that I acquired with my colleagues.
- I consider it important that my colleagues know what I am doing.
- I regularly inform my colleagues of what I am working on.

Page 7: Psychological safety

*Please read the following statements about your team's dynamics and indicate how accurate they are.*

- If you make a mistake in this team, it is often held against you.
- Members of this team are able to bring up problems and tough issues.
- People on this team sometimes reject others for being different.
- It is safe to take a risk on this team.
- It is difficult to ask other members of this team for help.
- No one on this team would deliberately act in a way that undermines my efforts.
- Working with members of this team, my unique skills and talents are valued and utilized.

Page 8: Goal orientations

*Please read the following statements about work attitudes and indicate how much you agree with them.*

- I am willing to select a challenging work assignment that I can learn a lot from.
- I often look for opportunities to develop new skills and knowledge.
- I enjoy challenging and difficult tasks at work where I will learn new skills.
- For me, development of my work ability is important enough to take risks.
- I prefer to work in situations that require a high level of ability and talent.
- I am concerned with showing that I can perform better than my coworkers.
- I try to figure out what it takes to prove my ability to others at work.
- I enjoy it when others at work are aware of how well I am doing.
- I prefer to work on projects where I can prove my ability to others.

Page 9: Work experience, number of employers, education/degree

*How many years of experience do you currently have?Please type a number.*

[…] years.

*How many different employers have you already had?Please type a number.*

[…] employers.

*What is the highest level of school you have completed or the highest degree you have received?*

- I did not finish primary school
- primary school
- secondary school
- high school diploma
- college/university degree
- other

Page 10: Work field, age, gender

*Which field do you work in?*

- Architecture and engineering
- Arts, culture and entertainment
- Business, management and administration
- Communications
- Community and social services
- Education
- Science, technology and IT
- Installation, repair and maintenance
- Farming, fishing and forestry
- Government
- Health and medicine
- Law and public policy
- Sales

- Other

*How old are you? Please type a number.*
I am […] years old.

*With which gender do you identify*
- female
- male
- other
- rather not say

Page 11: Nationality

*What is your nationality?*
[drop-down menu]

Page 12: End-page

Your answers help me a lot.

In detail, this study is about how leadership can create a safe team environment so that employees feel more comfortable sharing their knowledge with their coworkers. Parallel to that, the study also examines whether this effect is stronger among people with an attitude towards learning new skills or an attitude towards proving their competence.

If you have any questions or comments, please contact me via e-mail: *e-mail deleted from appendix.*

# Appendix B

## Composite reliability and average variance extracted

| Construct | Factors | Items | λ | $\lambda^2$ | $1-\lambda^2$ | CR | AVE | SQRT(AVE) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 0,91836775 | 0,5300697 | 0,728058858 |
| | | L001_12 | 0,690 | 0,4761 | 0,5239 | | | |
| | | L002_01 | 0,767 | 0,588289 | 0,411711 | | | |
| | Factor 1 | L002_09 | 0,723 | 0,522729 | 0,477271 | | | |
| | | L002_10 | 0,793 | 0,628849 | 0,371151 | | | |
| Transformational leadership | | L002_11 | 0,760 | 0,5776 | 0,4224 | | | |
| | | L001_07 | 0,674 | 0,454276 | 0,545724 | | | |
| | | L001_10 | 0,684 | 0,467856 | 0,532144 | | | |
| | Factor 2 | L001_11 | 0,703 | 0,494209 | 0,505791 | | | |
| | | L002_06 | 0,735 | 0,540225 | 0,459775 | | | |
| | | L002_12 | 0,742 | 0,550564 | 0,449436 | | | |
| | | Sum | 7,271 | 5,300697 | 4,699303 | | | |
| | | | | | | 0,87998202 | 0,55188733 | 0,742891199 |
| | | L001_04 | 0,750 | 0,5625 | 0,4375 | | | |
| | Factor 1 | L002_05 | 0,825 | 0,680625 | 0,319375 | | | |
| | | L002_07 | 0,777 | 0,603729 | 0,396271 | | | |
| Transactional leadership | | L001_09 | 0,661 | 0,436921 | 0,563079 | | | |
| | Factor 3 | L001_14 | 0,645 | 0,416025 | 0,583975 | | | |
| | | L002_02 | 0,782 | 0,611524 | 0,388476 | | | |
| | | Sum | 4,440 | 3,311324 | 2,688676 | | | |
| | | | | | | 0,95066518 | 0,82819725 | 0,910053432 |
| | Factor 1 | KD01_03 | 0,908 | 0,824464 | 0,175536 | | | |
| Knowledge donating | | KD01_04 | 0,930 | 0,8649 | 0,1351 | | | |
| | Factor 2 | KD01_01 | 0,929 | 0,863041 | 0,136959 | | | |
| | | KD01_02 | 0,872 | 0,760384 | 0,239616 | | | |
| | | Sum | 3,639 | 3,312789 | 0,687211 | | | |
| | | | | | | 0,86673807 | 0,52155117 | 0,722184995 |
| | | PS01_01r | 0,770 | 0,5929 | 0,4071 | | | |
| | | PS01_02 | 0,717 | 0,514089 | 0,485911 | | | |
| Psychological safety | Factor 1 | PS01_03r | 0,735 | 0,540225 | 0,459775 | | | |
| | | PS01_04 | 0,752 | 0,565504 | 0,434496 | | | |
| | | PS01_05r | 0,605 | 0,366025 | 0,633975 | | | |
| | | PS01_07 | 0,742 | 0,550564 | 0,449436 | | | |
| | | Sum | 4,321 | 3,129307 | 2,870693 | | | |
| | | | | | | 0,92804913 | 0,619013 | 0,786773792 |
| | | GO01_01 | 0,833 | 0,693889 | 0,306111 | | | |
| | | GO01_02 | 0,784 | 0,614656 | 0,385344 | | | |
| | Factor 1 (LGO) | GO01_03 | 0,865 | 0,748225 | 0,251775 | | | |
| | | GO01_04 | 0,780 | 0,6084 | 0,3916 | | | |
| Goal orientations | | GO01_05 | 0,634 | 0,401956 | 0,598044 | | | |
| | | Sum | 3,896 | 3,067126 | 1,932874 | | 0,6134252 | 0,783214658 |
| | | GO01_07 | 0,739 | 0,546121 | 0,453879 | | | |
| | Factor 2 (PGO) | GO01_08 | 0,784 | 0,614656 | 0,385344 | | | |
| | | GO01_09 | 0,851 | 0,724201 | 0,275799 | | | |
| | | Sum | 2,374 | 1,884978 | 1,115022 | | 0,628326 | 0,792670171 |
| | | SUM | 6,270 | 4,952104 | 3,047896 | | | |

$CR = (\sum\lambda)^2/[(\sum\lambda)^2 + \sum(1-\lambda^2)]$ $AVE = \sum\lambda^2/n$

## Appendix C

## Absence of multicollinearity

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | SE | Beta | t | Sig. | Tolerance | VIF |
| 1 | (Constant) | .968 | .565 | | 1.712 | .089 | | |
| | TAL | .214 | .086 | .194 | 2.492 | .014 | .802 | 1.247 |
| | TFL | .019 | .086 | .020 | .225 | .822 | .622 | 1.608 |
| | PGO | .107 | .054 | .144 | 1.998 | .047 | .941 | 1.063 |
| | LGO | .261 | .084 | .248 | 3.125 | .002 | .774 | 1.292 |
| | psysafe | .311 | .083 | .338 | 3.743 | <.001 | .596 | 1.679 |

a. Dependent Variable: KD

## Appendix D

## Uncorrelatedness of residuals

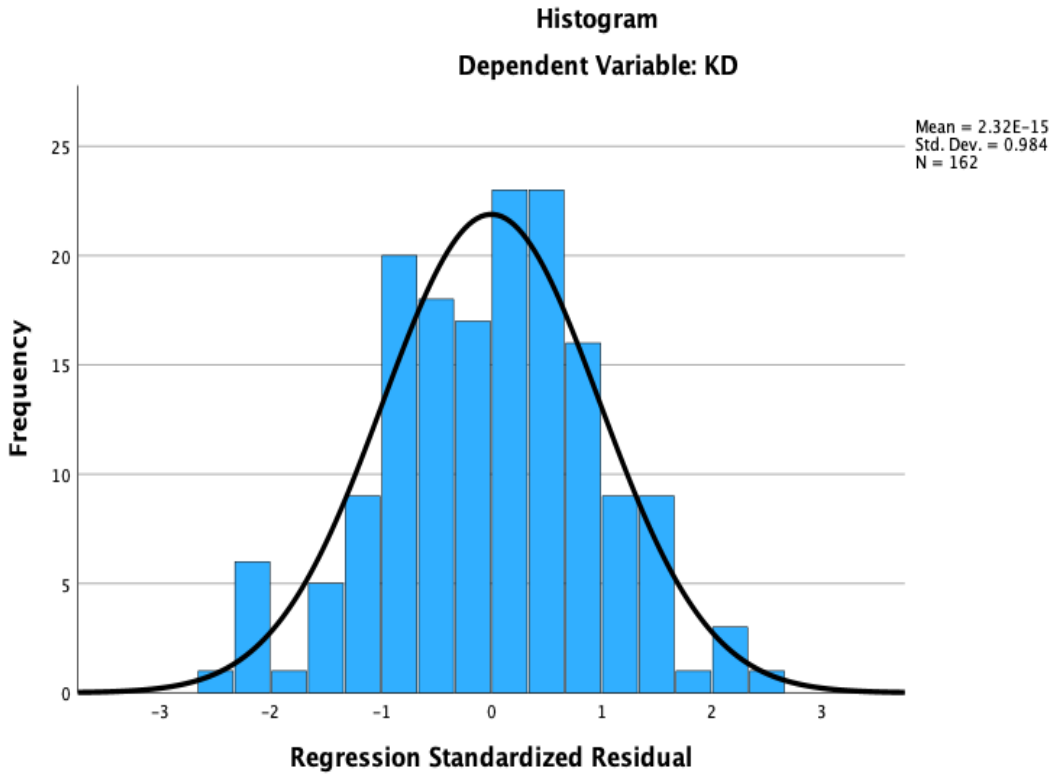
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | .492[a] | .242 | .218 | .74078 | 2.224 |

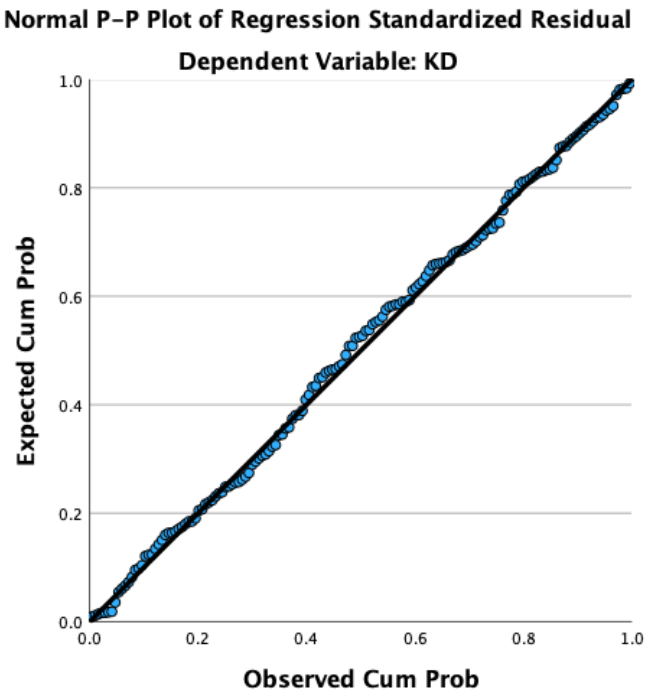
a. Predictors: (Constant), psysafe, PGO, LGO, TAL, TFL

b. Dependent Variable: KD

# Appendix E

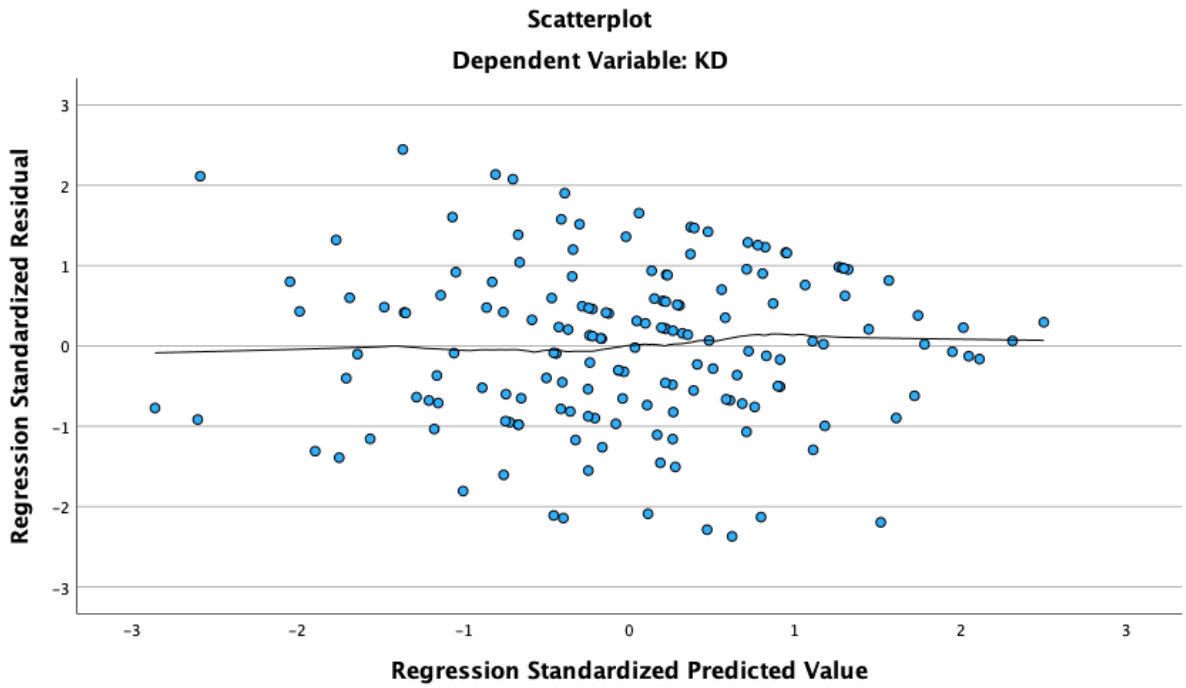
## Random normal distribution of errors



# Appendix F

## Homoscedasticity and linearity



## Appendix G

### Results on the indirect effects of leadership dimensions

| Construct | Sub-scale | Indirect effect β | BootSE | Bootstrap, 95% CI |
|---|---|---|---|---|
| Transformational leadership | Intellectual stimulation | 0.1142 | 0.0371 | 0.0449; 0.1903 |
| | Inspirational motivation | 0.1126 | 0.0435 | 0.0385; 0.2051 |
| | Individualized consideration | 0.1575 | 0.0472 | 0.0707; 0.2582 |
| | Idealized influence | 0.0825 | 0.0316 | 0.0290; 0.1511 |
| Transactional leadership | Passive management by exception | -0.1056 | 0.0360 | -0.1836; -0.0449 |
| | Active management by exception | -0.1503 | 0.0434 | -0.2450; -0.0773 |

*Note*. Mediation analysis was run with each dimension, wherein psychological safety was the mediator and knowledge donating was the dependent variable. The dimension ‘rewards’ is not included due to low factor loadings and low reliability.

## Appendix H

## Abstract

This research analyzes the effects of transformational and transactional leadership on the likelihood of employees donating their knowledge to colleagues. Specifically, it assesses the mediating role of psychological safety and the moderating effect of goal orientations in facilitating or inhibiting knowledge donating. To test the theoretical model, an online cross-sectional survey was conducted among employees in Austria, the Netherlands, Germany, and other Western countries. Results show that psychological safety fully mediates the relationship between transformational leadership and knowledge donating. This leadership style exerts strong influence on how comfortable employees feel in their teams and thereby greatly encourages them to share their knowledge. Likewise, psychological safety fully mediates the relationship between transactional leadership and knowledge donating. However, transactional leadership negatively impacts psychological safety, which results in a lower level of knowledge donating. The relationship between leadership styles and knowledge donating was not moderated by a person's goal orientation. The study sheds light on the importance of generating psychological safety in teams and extends the body of research on the heavily disputed direction of transactional leadership effects.

*Keywords*: Transformational leadership · Transactional leadership · Knowledge donating · Psychological safety · Goal orientations

**Abstrakt**

Diese Studie befasst sich mit den Auswirkungen von transformationaler und transaktionaler Führung auf die Wahrscheinlichkeit, dass Mitarbeiterinnen und Mitarbeiter ihr Wissen an Kolleginnen und Kollegen weitergeben. Insbesondere werden der Mediationseffekt von psychologischer Sicherheit und die moderierende Wirkung von Zielorientierungen analysiert. Anhand einer Online-Querschnittsstudie wurden Arbeitnehmerinnen und Arbeitnehmer in Österreich, den Niederlanden, Deutschland und weiteren westlichen Ländern befragt. Die Ergebnisse zeigen, dass der Zusammenhang zwischen transformationaler Führung und Wissensspende vollständig durch psychologische Sicherheit mediiert wird. Dieser Führungsstil hat einen starken Einfluss auf die psychologische Sicherheit von Mitarbeiterinnen und Mitarbeiter in ihren Teams und ermutigt sie dadurch, ihr Wissen vermehrt zu teilen. Ebenso vermittelt psychologische Sicherheit vollständig die Beziehung zwischen transaktionaler Führung und Wissensspende. Allerdings wirkt sich transaktionale Führung negativ auf die psychologische Sicherheit aus und hindert dadurch die Weitergabe von Wissen. Die Beziehung zwischen Führungsstilen und Wissensspende wurde nicht durch die Zielorientierung einer Person moderiert. Die Studie wirft ein Licht auf die Bedeutung von psychologischer Sicherheit in Teams und erweitert den Wissensstand über die stark umstrittenen Auswirkungen transaktionaler Führung.

*Schlüsselwörter*: Transformationale Führung · Transaktionale Führung · Wissensspende · Psychologische Sicherheit · Zielorientierungen