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Reconciling General and Safety-Specific Transformational Leadership: A Paradox Perspective

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Abstract

Research exploring the relationship between transformational leadership and safety has used transformational leadership in context-free (e.g., "general transformational leadership," or GTL) and context-specific forms (e.g., "safety-specific transformational leadership," or SSTL), assuming these constructs are theoretically and empirically equivalent. In this paper, we draw on paradox theory (Schad et al., 2016; Smith & Lewis, 2011) to reconcile the relationship between these two forms of transformational leadership and safety. We do so by (1) investigating whether GTL and SSTL are empirically distinguishable, (2) testing the relative importance of GTL and SSTL in explaining variance in context-free work outcomes (i.e., in-role performance, organizational citizenship behaviors) and context-specific (i.e., safety compliance, safety participation), and (3) examining the extent to which perceived safety concern in the work environment renders GTL and SSTL distinguishable. Two studies (one cross-sectional, one short-term longitudinal) show that GTL and SSTL are psychometrically distinct albeit highly correlated. Furthermore, SSTL explained statistically more variance than GTL in both safety participation and organizational citizenship behaviors, whereas GTL explained more variance in in-role performance than did SSTL. However, GTL and SSTL were only distinguishable in low-concern contexts but not high-concern contexts. These findings challenge the "either-or" (vs. "both-and") approach to considering safety and performance, cautioning researchers to consider nuanced differences in context-free and context-specific forms of leadership and to avoid further proliferation of often redundant context-specific operationalizations of leadership.

Keywords: paradox, relative weight analysis, safety, transformational leadership

Reconciling General and Safety-Specific Transformational Leadership: A Paradox Perspective

One of the most critical determinants of workplace safety is leadership, as is evident from research conducted over the last 30 years on the relationship between leadership and safety outcomes (Hofmann et al., 2017; Kelloway et al., 2017). Across this research, the leadership model that has received the most attention in relation to safety is the full-range leadership theory (Avolio et al., 1999)—and specifically its transformational leadership dimensions. Several researchers (e.g., Barling et al., 2002; Inness et al., 2010) have argued that transformational leadership provides appropriate behavioral strategies for leaders to promote workplace safety and to encourage better safety performance among subordinates. Most recently, Lyubykh et al.'s (in press) meta-analysis of leadership and safety finds a positive relationship between change-oriented leadership (which include transformational leadership) and employee safety performance.

Over 20 years ago, Barling et al. (2002) proposed a safety-focused conceptualization of transformational leadership, which they termed "safety-specific transformational leadership." The authors contended that safety-specific transformational leadership (which we abbreviate hereafter as SSTL) would be more predictive of safety outcomes than a more general, context-free approach, which they termed "general [transformational leadership]" (p. 494) (abbreviated hereafter as GTL). This research led to multiple studies about SSTL over the following two decades (e.g., Conchie & Donald, 2009; de Koster et al., 2011; Mullen et al., 2017; Mullen & Kelloway, 2009), illustrating its relationship with the same set of safety outcomes that had previously been associated with GTL (e.g., Hoffmeister et al., 2014; Inness et al., 2010; Willis et al., 2017, 2021).

While the idea of taking a context-specific approach to transformational leadership such as SSTL is appealing, and has generated significant empirical interest in other contexts (e.g., environmentally-specific transformational leadership, Robertson & Carleton, 2018), we argue that it has led researchers to overlook several important considerations. First, contextualizing transformational leadership creates theoretical confusion between the general and safety-specific conceptualizations. Terms like "safety-specific transformational leadership" (e.g., de Koster et al., 2011), "safety leadership" (e.g., Conchie et al., 2013), and "transformational leadership" while operationalizing the construct as safety-specific transformational leadership (e.g., Mullen et al., 2017) are used interchangeably under the assumption that they are conceptually synonymous. The extant literature has not carefully considered both the theoretical and empirical implications of this practice. Second, it is unclear whether SSTL has advantages in explaining incremental variance over GTL, and against which criteria we would anticipate SSTL having such advantages. The few existing studies that have examined GTL and SSTL simultaneously (e.g., McPhee et al., 2019; Mullen & Kelloway, 2009) did not demonstrate any clear advantage of SSTL over GTL. Given that leadership development remains one of the most effective interventions to improve workplace safety (Kelloway & Barling, 2010), it is crucial for both researchers and practitioners alike to know where to place their limited time and resources in attempts to improve safety (Granger et al., 2021).

While the positive association between both forms of transformational leadership and better employees' safety outcomes is well-established (Lyubykh et al., in press), addressing the nuances described above could advance our understanding of the transformational leadership–safety relationship. To do this, we draw from emerging research on organizational paradox theory (Schad et al., 2016; Smith & Lewis, 2011) to clarify the distinction between GTL and

SSTL. Specifically, we argue that GTL and SSTL should be considered as distinct constructs because of the apparent paradox between workplace safety and general performance. Furthermore, we directly compare the effects of GTL and SSTL on safety-related as well as non-safety-related outcomes. Lastly, we argue that the safety-performance paradox, and hence the GTL-SSTL distinction, varies depending on the perceived safety concern in the work context: the effects of GTL and SSTL are more distinguishable in low-concern than high-concern work contexts.

In doing so, we make three contributions to the literature. First, we shed light on the differences between GTL and SSTL. As we will describe, the extant literature has long accepted that GTL and SSTL are synonymous and can be used interchangeably, yet this practice is problematic (see Inness et al., 2010; Kelloway et al., 2006) and can potentially hinder our understanding of the relationship between transformational leadership and workplace safety. The current research demonstrates that GTL and SSTL are and should be treated as distinct constructs. More generally, this has significant implications for the contextualization of leadership constructs, which remains a common practice in the extant literature (e.g., environmental-specific transformational leadership; Robertson & Barling, 2013, 2017). Furthermore, we also provide a direct test of whether SSTL explains incremental variance in safety outcomes over GTL—the fundamental assumption of Mullen and Kelloway's (2009) model of SSTL—which has not yet been tested explicitly.

Second, we heed the call to examine workplace safety through an organizational paradox lens (Hasle et al., 2021; Hu et al., 2020). Hu et al. (2020) with some scholars (e.g., Hollnagel, 2017; Reason, 1997) long arguing that workplace safety and performance are perceived as contradictory goals. Only by acknowledging this paradox and exploring its effects can we

advance our theoretical understanding of workplace safety and how to achieve safety and performance simultaneously. Being able to accept and constructively engage with paradoxes is crucial for the long-term sustainability and development of organizations (Hargrave & Van de Ven, 2017; Smith & Lewis, 2011). As such, our research further validates the value of organizational paradox theory in the workplace safety domain by showing that the GTL-SSTL distinction reflects this safety-performance paradox.

Third, we offer preliminary evidence that individuals' perceptions of the safety-performance paradox affect their reactions to GTL and SSTL by exploring differences in reaction between high- and low-concern contexts. Existing research has shown that safety is treated differently in high-risk industries compared to low-risk industries (Lyubykh et al., in press). Furthermore, the research on high-reliability organizations (HROs; Farjoun, 2010; Reason, 2000) has demonstrated that organizations can attain high levels of safety and performance simultaneously. We advance this line of research by arguing that the effects of SSTL become less distinct than those of GTL in high-concern contexts, because safety is more ingrained and accepted as a part of day-to-day operations in high-concern contexts. In doing so, we challenge the traditional view that safety must compete with other organizational priorities, and reposition safety as one among multiple important outcomes that employees and their organizations strive to achieve.

Theoretical Background

Transformational Leadership and Safety

Building on the work of Burns (1978), Bass (1985) conceptualized transformational leadership within full-range leadership theory, which encompasses a constellation of leadership behaviors ranging from laissez-faire (passive), through transactional to transformational

leadership behaviors. Transformational leadership remains the most studied leadership model (Barling et al., 2011), and comprises four facets often considered together as a higher-order transformational leadership factor:

(1) *idealized influence*, meaning leaders' demonstration of admirable attributes and behaviors that reflect their high moral standard;

(2) *inspirational motivation*, which refers to how leaders communicate an appealing vision and encourage followers to strive beyond their individual goals;

(3) *intellectual stimulation*, or how leadership behaviors allow and support followers to face and overcome challenges; and

(4) *individualized consideration*, meaning the degree to which leaders recognize and address each follower's needs.

Multiple reviews of the literature over the years have underscored the favorable and meaningful role of GTL on a range of employee outcomes, including safety performance (Dumdum et al., 2002; Judge & Piccolo, 2004; Wang et al., 2011). Across the two decades of research on transformational leadership and employee safety performance (e.g., Barling et al., 2002; Lyubykh et al., in press), the most commonly studied individual-level safety outcomes are safety compliance (i.e., in-role behaviors consistent with safety rules and regulations; Neal et al., 2000) and safety participation (i.e., extra-role behaviors that ultimately contribute to workplace safety; Neal et al., 2000). More generally, meta-analytic evidence consistently demonstrates a positive relationship between constructive leadership (which includes transformational leadership) and safety behaviors, with correlations ranging from .29 to .40 (Christian et al., 2009; Clarke, 2013; Nahrgang et al., 2011; Lyubykh et al., in press).

Safety-Specific Transformational Leadership

More than two decades ago, Barling et al. (2002) proposed a context-specific conceptualization of transformational leadership (i.e., SSTL) based on two premises: (1) the four dimensions of transformational leadership are readily suitable for promoting safety, and (2) leadership behaviors that prioritize safety tend to result in better safety outcomes. Specifically, the authors define SSTL as transformational leadership behaviors that focus on occupational safety and describe its four facets as follows:

(1) safety-specific *idealized influence* allows leaders to prioritize safety through their attitudes and behaviors, which in turn facilitate followers' internalization of safety values;

(2) through safety-specific *inspirational motivation* behaviors, leaders encourage their followers to strive for and achieve better safety in the workplace;

(3) safety-specific *intellectual stimulation* behaviors enable leaders to use followers' knowledge and creativity to contribute to overall organizational improvement in work safety; and lastly,

(4) safety-specific *individualized consideration* behaviors demonstrate leaders' attention to the safety of their followers.

Later research by Kelloway et al. (2006) and Mullen and Kelloway (2009) argued that SSTL could be a stronger predictor of safety outcomes than GTL. Subsequently, several researchers adopted this context-specific (vs. context-free) approach to transformational leadership as the default way of operationalizing leadership when studying safety (e.g., Conchie & Donald, 2009; Mullen & Kelloway, 2009; Mullen et al., 2011). Findings from these studies show that SSTL is positively related to employee safety outcomes, such as safety compliance and safety participation (e.g., Jiang & Probst, 2016), but also extend to perceived safety climate (e.g.,

Lu et al., 2019), safety-specific trust (e.g., Conchie & Donald, 2009), and safety voice (e.g., Conchie, 2013).

Comparing GTL and SSTL

The extant literature has treated GTL and SSTL as if they are interchangeable. Past research has argued that transformational leaders (by definition) care about employees' safety (Kelloway et al., 2006; Zohar, 2002), hence there is little reason to differentiate GTL and SSTL. From this perspective, SSTL can be considered, as Swift and Peterson (2019) would characterize it, as a "contextualization" of the GTL construct. Apart from the examples mentioned earlier, this practice of treating GTL and SSTL as interchangeable is evident in meta-analytic findings about the relationship between leadership and safety. For instance, Clarke (2013) meta-analyzed 37 independent studies containing data on leadership and safety, and grouped GTL and SSTL into the same category. Two other meta-analyses that examine a range of antecedents of workplace safety—Christian et al. (2009) and Nahrgang et al. (2011)—also consolidated GTL and SSTL.

However, this practice of using GTL and SSTL interchangeably can be problematic as it is unclear how contextualizing transformational leadership may change the nature of the construct. As one recent study demonstrated, non-transformational leadership behavior focusing on safety outperformed general transformational leadership in explaining variance in safety behavior (Mattson Molnar et al., 2019). This result may imply that any leadership behavior prioritizing safety will lead to improved safety performance, regardless of whether those behaviors are transformational or not. Furthermore, researchers have developed other models of safety-specific leadership that—although not explicitly premised on transformational leadership—use leadership terms like "safety leadership" to describe leadership behaviors like those captured by SSTL. Examples of these models include the trio of safety monitoring, safety

inspiring, and safety learning (Griffin & Hu, 2013), the S.A.F.E.R leadership model (Ozbilir, 2021; Wong et al., 2015), LEAD Safety (Casey et al., 2019), safety-specific leadership (Nielsen et al., 2019), and leader safety role modeling (Ogunfowora et al., 2021). Taken together, leadership constructs in which safety are embedded have proliferated without due consideration paid to theoretical similarities and differences with their general forms[1].

A few studies have discussed the potential distinction between GTL and SSTL. For one, Kelloway et al., (2006) maintained that SSTL should be distinct from GTL because there is no guarantee that a leader being transformational toward general performance will also be transformational toward safety. In other words, a leader high on GTL is not necessarily also high on SSTL, and vice versa. Inness et al. (2010) also raised multiple concerns with the interchangeable usage of GTL and SSTL. Inness et al. warned that using SSTL to predict employee safety outcomes may confound the effects of the leaders' transformational behaviors and leaders' focus on safety, and that similar item wording content in the predictor (i.e., SSTL) and criterion measures (e.g., safety participation) may artificially inflate the relationship between SSTL and employees' safety outcomes. Furthermore, relying on SSTL as the sole predictor in models of employee safety outcomes severely limits the ecological validity of the research, given that safety is just one of many goals and priorities that leaders are responsible for promoting. All

[1] Some research has examined the empirical relationship between some of these "competing" safety leadership constructs. Kelloway and Mullen (2016, p. 16) report a zero-order correlation between measures of S.A.F.E.R and safety-specific transformational leadership of .86 ($p < .001$). Similarly, Ozbilir (2021, p. 42) shows an attenuated correlation between S.A.F.E.R and safety-specific transformational leadership of .85 ($p < .01$) and an attenuated correlation between S.A.F.E.R and "safety leadership" (seemingly an index of Griffin and Hu's [2013] trio of safety monitoring, safety inspiring, and safety learning) also of .85 ($p < .01$).

told, scholars must be more careful with using SSTL in their research and assuming it shares the same conceptualization.

The Safety-Performance Paradox

To address these contradictions between GTL and SSTL, we draw on organizational paradox theory (Schad et al., 2016; Smith & Lewis, 2011). Paradox refers to the juxtaposition of interrelated elements that are seemingly logical when considered separately, but contradictory when considered together (Fairhurst et al., 2016, Smith & Lewis, 2011). Paradox theory maintains that individuals are generally unprepared to work with paradoxes, but the ability to manage paradoxes is closely related to the organization's long-term development and sustainability (Smith & Lewis, 2011). To date, workplace safety is often portrayed as a trade-off with work performance (Hu et al., 2020). Safety and work performance are described in the form of a paradox, an "either/or" situation—maximizing safety compromises performance, and vice versa. For example, Zohar (2010) argues that organizations must prioritize safety over production to achieve high levels of safety. Given that safety and performance are often perceived as incompatible, it is unreasonable to expect that leadership behaviors promoting safety and promoting performance can be treated as equivalent. Thus, from this perspective, GTL and SSTL are incompatible as a leader must choose whether to prioritize performance (GTL) or safety (SSTL) rather than striving for both simultaneously.

Existing empirical evidence suggests that GTL and SSTL are distinct. Mullen and Kelloway (2009) found that GTL and SSTL loaded on two different factors, supporting the idea that they are distinct albeit very highly correlated. Research on other context-specific operationalizations of transformational leadership (i.e., environmentally specific transformational leadership; Robertson & Barling, 2013, 2017; Robertson & Carleton, 2018) has shown similar

results: context-specific and context-free transformational leadership loaded on two different albeit highly correlated factors. In sum, empirical findings in the safety literature and beyond indicate that GTL and SSTL are sufficiently different to warrant treatment as two distinct constructs. Thus, we hypothesize that GTL and SSTL are distinct albeit highly correlated constructs.

Hypothesis 1: GTL and SSTL are distinct but correlated constructs.

The Different Effects of SSTL and GTL on Safety-Related and Non-Safety-Related Outcomes

Assuming GTL and SSTL are distinct constructs, it is important to examine whether they have different effects on relevant outcomes, and whether one has an advantage over the other. SSTL was built on the premise that safety-specific leadership would be a stronger predictor of safety outcomes than general leadership (Kelloway et al., 2006; Mullen & Kelloway, 2009). Still, few studies have actually compared GTL and SSTL directly; to our knowledge, we only found GTL and SSTL directly compared empirically in three separate studies. First, Mullen (2005) surveyed a sample of healthcare workers and showed that SSTL explained incremental variance in safety climate, safety participation, safety compliance, and safety-related events above GTL. Second, Mullen and Kelloway (2009) directly compared the effects of GTL and SSTL training on a sample of nurses in a field experiment, showing that SSTL training improved managers' safety attitudes and self-efficacy more so than did GTL training. Third, Lyubykh et al.'s (in press) meta-analysis demonstrated that safety-specific change-oriented leadership (which included SSTL) was more strongly related to safety compliance and safety participation than generalized change-oriented leadership (which included GTL). Taken together, this evidence suggests that SSTL is a better predictor of many employee safety outcomes than GTL is.

Paradox theory supports the notion that SSTL is a better predictor of safety behaviors than GTL. From the paradox perspective, safety and performance are perceived to be incompatible and are difficult to maximize simultaneously (Hu et al. 2020). Thus, it is unlikely that the same set of leadership behaviors can motivate employees to perform better and more safely equally well and at the same time. In other words, leadership behaviors that focus on performance goals should be more effective on performance goals than safety goals, and vice versa. As Kelloway et al. (2006) noted, leaders who motivate employees to strive for better performance may inadvertently allow employees to neglect their safety responsibilities. Similarly, leaders who promote safety may implicitly accept that safety is prioritized over performance and that employees can sacrifice performance when safety needs arise (Zohar & Luria, 2004). Thus, SSTL would have a stronger association with safety behaviors than GTL, and GTL would have a stronger association with general performance than SSTL. It is well established that GTL is associated with employees' in-role and extra-role performance (Hoch et al., 2018; Wang et al., 2011). As in-role performance and organizational citizenship behaviors (OCB) are indicators of general performance, we expect them to relate more strongly to GTL than to SSTL. In sum, we hypothesize that SSTL is a better predictor of safety compliance and safety participation than GTL is, and GTL is a better predictor of in-role performance and OCB than SSTL is.

Hypothesis 2: SSTL is more important than GTL in predicting (a) safety compliance and (b) safety participation.

Hypothesis 3: GTL is more important than SSTL in predicting (a) in-role performance and (b) OCB.

How Variation in Perceived Safety Concern Matters

Despite the empirical findings discussed above, we do not consider the existing evidence of the incremental value of GTL and SSTL to be definitive. For example, Mullen and Kelloway (2009) did not demonstrate the incremental validity of GTL or SSTL in explaining variance in many safety-related outcomes. Specifically, when directly comparing GTL and SSTL, Mullen and Kelloway reported that SSTL training did not result in any higher intentions among leaders to promote safety than GTL training did, nor was SSTL associated with improved employee outcomes such as perceived safety climate, safety compliance, safety participation, and reduced injuries. More recently, while not solely focused on leadership, McPhee et al. (2019) measured both GTL and SSTL and assessed their effects on employees' safety behavior. Surprisingly, when included in the same regression model, GTL but not SSTL was retained as a significant predictor of safety behavior. Hence, despite Kelloway et al.'s (2006) and Mullen and Kelloway's (2009) arguments that SSTL should be a better predictor of safety outcomes than GTL, there is contradictory empirical evidence substantiating this assertion. Given these issues, it is important to scrutinize the similarities and differences between GTL and SSTL, as well as how they relate to safety and non-safety outcomes.

We draw again on paradox theory (Schad et al., 2016; Smith & Lewis, 2011) to potentially reconcile these contradictory findings. Paradox theory posits that how individuals react to paradoxes depends largely on whether they adopt an "either/or" or a "both-and" approach (Hargrave & Van de Ven, 2017; Schad et al., 2016). When individuals adopt an "either/or" mindset, they perceive the opposing elements as incompatible, and any decision involving the elements must encompass some degree of sacrifice or compromise. Furthermore, paradoxes can appear more intimidating through an "either/or" mindset, and more likely to lead

to maladaptive responses (Smith & Lewis, 2011). In contrast, individuals who adopt a "both-and" mindset acknowledge the contradiction between the opposing elements but still entertain the possibility that both can be attained simultaneously. In effect, individuals with a "both-and" mindset are more comfortable with paradoxes than those with an "either/or" mindset.

In the same way, managers would perceive and react to the safety-performance paradox differently depending on the extent to which they adopt the "either/or" or "both-and" mindsets. It is perhaps more intuitive to visualize safety and performance in an "either/or" nature. Managers have limited resources, such as time, focus, and budget. As a result, if they allocate some resources to safety, they will have fewer to devote to general work performance. What is less obvious is the conflict between safety and performance and how this conflict may vary in different contexts. Depending on how likely safety incidents are, and how serious the consequences will be if they occur, leaders are potentially required to manage both safety and performance simultaneously. In these circumstances, leaders are more likely to consider both safety and performance goals as equally important, and in turn be more receptive to a "both-and" perspective that values both.

High-reliability organizations (HROs) are a compelling example of a "both-and" orientation. HROs (e.g., nuclear plants, space shuttles, aircraft carriers) must manage extremely hazardous and unpredictable work environments (Farjoun, 2010). Yet, they are highly effective organizations that can maintain very high performance standards and extremely low incident and injury rates despite the constant uncertainties (Hu et al., 2020; Reason, 2000). In these environments, the risk of incidents and injuries are apparent. Employees and management can readily recognize where and when an incident may occur; as examples, they may have to work with heavy machinery, hazardous materials, and in more general uncertain work circumstances

(Leach et al., 2013). Furthermore, the consequences of incidents can be exponentially high. In certain cases, an incident can have far-reaching consequences beyond the organizations themselves (e.g., nuclear plants). Thus, HROs must acknowledge the presence of safety risks (Farjoun, 2010; Reason, 2000). To achieve safety, HROs confront safety problems and tackle safety challenges in conjunction with other organizational goals (Farjorn, 2010).

People working in HROs and other organizations in which safety is a major concern must readily accept that safety is an important part of their job. In other words, they are more likely to have a "both-and" mindset when thinking about safety and performance. They may even perceive that safety is integral to ensure the organization's performance, and the absence of safety is the recipe for performance failures. Tompa et al. (2016) found that manufacturing businesses could implement joint management systems focusing on both safety and operations, observed no trade-off, and could even outperform organizations which focus on one at the cost of the other. Similarly, Jeschke (2022) showed that managers in construction sites must and could transcend the "either/or" mindset to balance safety and production goals. In that study, managers' ability to do so corresponded closely to their experience and expertise working around the tension between safety and performance. Managers seemed to understand that they must achieve both safety and performance goals, and they can overcome the apparent trade-offs with a "both-and" mindset. For example, topics related to safety would appear more frequently in their communications, and such leaders are more comfortable with linking safety with performance. In turn, employees look to leaders for cues as to what needs to be prioritized, and they are more likely to accept the co-existence of safety and performance goals. Therefore, the effects of GTL and SSTL on safety and non-safety outcomes would be much less distinctive in work environments where safety risks are highly salient.

In contrast, people working in environments in which safety is perceived to be a minor concern or a non-issue would behave differently. Interestingly, a certain level of risk can facilitate more effort toward safety (Farjoun, 2010; Grote, 2015). In low-concern environments, incidents are generally rare, and the perceived possibility of a severe injury occurring is extremely low. Also, many incidents may not result in any injury. Thus, people may believe that occasional incidents will have little to no impact on their performance and the organization's operation. As a result, leaders and employees are more likely to treat safety as an afterthought, perhaps important but not enough to supersede performance. Thus, leaders may approach safety with an "either/or" mindset. To them, any extra effort toward safety can be put toward something else that brings more value, such as efficiency (Hollnagel, 2017).

Furthermore, people working in low-concern contexts may not have enough experience with safety problems to develop a deep understanding of the importance of safety to put it on level terms with performance. Leaders in low-concern contexts would not have the pressure or the exposure to develop the competencies often required to work with paradoxes (Waldman & Bowen, 2016; Zhang et al., 2015). Indeed, research has shown that workplace safety can complement financial performance (Fernández-Muñiz et al., 2009; Sousa et al., 2021), yet most still see safety as competing rather than complementing performance. As a result, leaders might consider a focus on safety to be redundant and conflict with their focus on performance, and likely make decisions involving trade-offs. In turn, employees are likely to adopt the "either/or" mindset: GTL conveys that performance is emphasized over safety, whereas SSTL would direct employees' attention toward safety goals. In other words, the effects of GTL and SSTL on safety and non-safety outcomes would be more distinctive in a low-concern work environment, such that GTL is relatively more important than SSTL for non-safety outcomes, and vice versa.

Hypothesis 4: The importance of SSTL over GTL in predicting (a) safety compliance and (b) safety participation is stronger in low-concern than high-concern contexts.

Hypothesis 5: The importance of GTL over SSTL in predicting (a) in-role performance and (b) OCB is stronger in low-concern than high-concern contexts.

Study 1

Method

Participants and Procedure

We collected data from 148 employees working on a construction project (a high-concern environment) in the United Kingdom. Except for one participant who self-identified as female and eight participants who did not indicate their sex, all participants self-described as male. The mean age of participants was 37.7 years (*SD* = 11.9), and participants had spent an average of 15.9 months (*SD* = 11.3) working in the unit in which the data were collected. Almost half of the sample were permanent employees, 8.7% were temporary employees, and 37.6% percent worked as contracted agents. Employees who participated in this study completed a paper-and-pencil questionnaire about their own safety compliance and safety participation, and their perceptions of their supervisors' GTL and SSTL.

Measures

All items were rated on a 5-point Likert scale.

GTL. We measured GTL using the seven-item Global Transformational Leadership scale (Carless et al., 2000) along with two additional items we developed to assess contingent reward. While contingent reward is often categorized as a transactional leadership behavior (Bass & Riggio, 2006), contingent reward correlates very highly with the transformational leadership components (Barling et al., 2002) and is included here because the measure of SSTL (described

directly below) also contains two contingent reward items. Inclusion of two transactional leadership items enables a fair comparison of SSTL and GTL, specifically fidelity of measurement (Cooper & Richardson, 1986). An example of one of the Carless et al. (2000) scale items is "My [supervisor] communicates a clear and positive vision of the future." Higher scores indicate higher GTL (α = .90).

SSTL. SSTL was measured with the 10 items used by Barling et al. (2002), each of which were modified from selected items from the Multifactor Leadership Questionnaire (MLQ; Bass & Avolio, 1995). SSTL assesses the four components of transformational leadership as well as contingent reward, which is highly correlated with transformational leadership. An example of one of the scale items is "My [supervisor] encourages me to express my ideas and opinions about safety at work." Higher scores indicate higher SSTL (α = .92).

Safety Compliance. We measured safety compliance with three items from Neal and Griffin's (2006) safety compliance scale. An example item is "I use all the necessary safety equipment to do my job." Higher scores indicate greater safety compliance (α = .81).

Safety Participation. Safety participation was assessed with three items (e.g., "I promote the safety program within the organization") from Neal and Griffin's (2006) safety participation scale. Higher scores indicate greater safety participation (α = .76).

Analytical Approach

We first conducted a confirmatory factor analysis (CFA) on GTL and SSTL to test the measurement model using Mplus 8.4 (Muthén & Muthén, 2017). Specifically, we compared the hypothesized model in which GTL and SSTL are two distinct factors with a bifactor model (Dunn & McCray, 2020), which consists of a general latent factor where all indicators load on to and two subfactors accounting for unique variance of GTL and SSTL, respectively. We also

compared the hypothesized model with an alternative model in which GTL and SSTL were combined. Next, we used hierarchical multiple regression in SPSS 28 to examine the incremental validity of GTL and SSTL. Multicollinearity between predictors in multiple regression can cause the coefficient estimates to be less reliable, difficult to interpret, and sometimes flips the sign of the relationships between predictors and the criteria (Alin, 2010). Thus, we do not interpret the regression coefficients and instead focus only on the incremental variance that GTL and SSTL can account for (Braun & Oswald, 2011). To supplement regression analysis, we used relative weight analysis (RWA; Tonidandel & LeBreton, 2011) to assess the relative importance of GTL and SSTL in predicting employee safety behavior. RWA was conducted using the R script obtained from RWA Web (Tonidandel & LeBreton, 2015)[2].

Results

Descriptive statistics, zero-order correlations, and scale reliabilities appear in Table 1. CFA results are presented in Table 2. The hypothesized four-factor model (Model 1) demonstrated excellent fit to the data: χ^2 (48) = 87.47, $p < .001$, comparative fit index (CFI) = .96, Tucker Lewis index (TLI) = .95, root mean square error of approximation (RMSEA) = .07, standardized root mean square residual (SRMR) = .05. Furthermore, the hypothesized model demonstrated significantly better fit than the bifactor model (Model 2: $\Delta\chi^2$ (4) = 11.62, $p < .05$)

[2] For the sake of triangulation, we also analyzed the data using dominance analysis (DA; Azen & Budescu, 2003). Braun and Oswald (2011) advocated the use of multiple methods to evaluate relative importance of predictors. That said, RWA and DA tend to produce similar results especially in models with two competing predictors (Braun et al., 2019). Here, we choose to focus predominantly on RWA because it allows us to test statistically for the relative importance of GTL and SSTL using bootstrapping and confidence interval. The results of DA are available upon request.

as well as the three-factor model (Model 3: $\Delta\chi^2$ (3) = 36.46, $p < .001$). Therefore, Hypothesis 1 was supported[3].

We present results from regression and RWA in Table 3. We found that GTL and SSTL combined explained 7.4% of the variance in safety compliance ($p = .004$). Neither GTL nor SSTL explained unique variance beyond the other in safety compliance ($\Delta R^2 = .001$, $p = .64$ and $\Delta R^2 = .02$, $p = .11$, respectively). RWA showed that GTL was responsible for 39.73% of this explained variance ($R^2_{RW} = .03$), whereas SSTL accounted for 60.27% of the explained variance ($R^2_{RW} = .05$). However, bootstrapping results (Tonidandel et al., 2009) indicated that the weights of GTL and SSTL were not significantly different from one another, 95% CI = [-.06, .03]. Thus, Hypothesis 2a was not supported.

Finally, GTL and SSTL together accounted for 16% variance in safety participation ($p < .001$). SSTL explained significant unique variance beyond GTL in safety participation ($\Delta R^2 = .05$, $p = .004$). RWA showed that GTL accounted for 34.34% ($R^2_{RW} = .06$), while SSTL accounted for 65.66% ($R^2_{RW} = .11$) of the explained variance. In contrast to our regression analysis, bootstrapping results indicated that the weights were not significantly different (95% CI = [-.13, .02]). Thus, Hypothesis 2b was only partially supported.

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[3] To rule out Inness et al.'s (2010) concern about common item wording between predictor variables (i.e., SSTL) and criterion variables (i.e., safety participation and safety compliance), we used CFA to test an alternative model: We specified an alternative four-factor model in which we constrained the variance of all latent variables to unity (see Model 5, Table 2), and then used this model to analyze incremental fit of a common wording factor (see Model 6, Table 2). Both models converged successfully; however, the common wording factor failed to improve model fit significantly. Thus, our results show no evidence of inflated relationship due to common item wording.

Discussion

Overall, Study 1 demonstrates that GTL and SSTL are distinct yet highly correlated constructs. Notably, our results did not demonstrate that SSTL is a better predictor of safety compliance than GTL. Furthermore, only partial support emerged for the advantage of SSTL over GTL in predicting safety participation: SSTL explained significant incremental variance beyond GTL, but RWA showed that both were equally important predictors.

At the same time, Study 1 has several notable limitations. First, the sample size was small, and we conducted both CFA and RWA on the same sample, increasing the risk of false negatives. Second, all the data are cross-sectional. Third, all participants were manual laborers involved in construction, with physical safety a salient concern, which may confound the relationships among GTL, SSTL, and safety outcomes. As we argued above, the distinction between GTL and SSTL is likely blurred in a high-concern work environment. Thus, future research needs to address this model across a range of jobs and occupations. Fourth, all the outcomes concerned safety, disabling a fair comparison (Cooper & Richardson, 1986) with comparable non-safety outcomes (i.e., safety compliance = task performance; safety participation = OCB). We address all four of these limitations in Study 2.

Study 2

Method

Participants and Procedure

We collected data from 505 participants through the Qualtrics platform with participants completing two surveys with a two-week gap. At Time 1, participants rated the extent to which safety is a concern in their workplace as well as their direct supervisors' GTL and SSTL. At Time 2, participants rated their own safety compliance, safety participation, in-role performance, and

OCB during the previous two-week period. In total, 412 participants completed both surveys and were included in this study. We split our sample based on their ratings of perceived safety concern ("low-concern" vs. "high-concern") in their workplace (the measure of which is described below).

In the "low-concern" sample (n = 187), the mean age of participants was 41.5 years (SD = 12.5). All participants in this sample were employed full-time. Among them, 163 participants self-identified as female (87.2%). All the participants obtained at least high school education, 72 (38.5%) obtained a university degree, and 47 (25.1%) obtained post-graduate education. The industries most represented in this sample include education (20.3%), health care and social assistance (15.5%), manufacturing (6.4%), financial services (3.7%), and government and public administration (3.7%). Of note, 41.2% of the participants were working in management positions, 28.3% were administrative staff, and 13.4% were working in teaching positions.

In the "high-concern" sample (n = 227), the mean age was 38.7 years (SD = 12.7). All participants were working full-time. Among them, 163 participants self-identified as female (71.8%). Almost all (99.6%) participants obtained high school education or higher, 69 (30.4%) obtained a university degree, and 58 (25.5%) obtained post-graduate education. The industries represented in this sample were more diverse, including health care and social assistance (18.1%), education (11.5%), manufacturing (7.9%), sales (6.2%), information technology (5.7%), construction (5.7%), food and beverage (5.3%), and government and public administration (4.4%). Finally, 52.4% of the participants were working in management positions, 16.3% were administrative staff, and 14.5% were skilled laborers.

Measures

All items were rated on a 5-point Likert scale.

Perceived Safety Concern. Perceived safety concern was assessed with a single item "To what extent is physical safety a general concern on your job?" Higher scores indicate higher safety concern. Like prior research (e.g., Katz-Navon et al., 2020), participants who responded three or above were grouped into the "high-concern" sample, while the remaining participants were grouped into the "low-concern" sample.

GTL and SSTL. GTL (α = .97) and SSTL (α = .97) were both measured at Time 1 with the same scales used in Study 1.

Safety Compliance and Safety Participation. Safety compliance (α = .91) and safety participation (α = .88) were both assessed at Time 2 with the same scales used in Study 1.

In-role Performance and OCB. In-role performance was measured at Time 2 using four selected items from Williams and Anderson's (1991) in-role performance scale: "I fulfilled all the responsibilities specified in my job description"; "I consistently met the formal performance requirements of my job"; "I conscientiously performed tasks that were expected of me"; and "I adequately completed all of my assigned duties." Higher scores indicate greater job performance (α = .90). OCB were measured using the 10-item (e.g., "Helped new employees get oriented to the job") short version of the Organizational Citizenship Behavior Checklist (OCB-C; Fox et al., 2012). Higher scores indicate more frequent OCB (α = .90).

Results

We present descriptive statistics and zero-order correlations in Table 4 for the low-concern sample and high-concern samples. Like Study 1, we conducted CFA, hierarchical linear regressions, and RWA to assess the hypotheses.

Results from Low-Concern Sample (n = 187)

CFA results are presented in Table 5. The hypothesized six-factor model (Model 1) demonstrated good fit to the data: χ^2 (174) = 366.17, $p < .001$, CFI = .95, TLI = .94, RMSEA = .08, SRMR = .04. The hypothesized model fits the data better than the bifactor model (Model 2: $\Delta\chi^2$ (6) = 49.05, $p < .001$) and the five-factor model (Model 3: $\Delta\chi^2$ (5) = 354.29, $p < .001$). Thus, Hypothesis 1 was supported. Like Study 1, we retained GTL and SSTL as separate albeit correlated factors[4].

Table 6 summarizes the results from hierarchical regression and RWA. We found that GTL and SSTL did not account for significant variance in safety compliance ($R^2 = .01$, $p = .30$). Neither GTL nor SSTL explained significant incremental variance over one another. RWA showed that GTL and SSTL were responsible for 77.01% ($R^2_{RW} = .01$) and 22.99% ($R^2_{RW} = .003$) of the variance in safety compliance, respectively, However, bootstrapping indicated that the relative importance of GTL and SSTL was not statistically significant (95% CI = [-.005, .05]). Thus, Hypothesis 2a was not supported.

GTL and SSTL together accounted for 13.4% variance of safety participation ($p < .001$). Both GTL and SSTL explained unique variance in safety participation ($\Delta R^2 = .06$, $p < .001$ and $\Delta R^2 = .13$, $p < .001$, respectively). RWA showed that GTL was responsible for 25.55% ($R^2_{RW} = .04$) and SSTL for 74.45% ($R^2_{RW} = .12$) of the variance. Bootstrapping indicated that SSTL was significantly more important than GTL in predicting variance in safety participation (95% CI = [-.17, -.03]). Thus, Hypothesis 2b was supported.

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[4] Like Study 1, we also tested for the common wording factor in both subsamples (see Model 5, Table 5 and Model 5 and 6, Table 7): the common-item wording factor significantly improved model fit compared to the hypothesized model in the low-concern sample but failed to do the same in the high-concern sample.

Hypothesis 3 predicted that GTL would be more important than SSTL in predicting in-role performance and OCB. GTL and SSTL together accounted for 7.7% variance in in-role performance ($p < .001$). Both GTL and SSTL accounted for significant, unique variance in in-role performance ($\Delta R^2 = .08$, $p < .001$ and $\Delta R^2 = .04$, $p = .007$, respectively). RWA showed that GTL was responsible for 72.96% ($R^2_{RW} = .06$) compared to 27.04% ($R^2_{RW} = .02$) by SSTL, and bootstrapping showed that GTL was significantly more important than SSTL (95% CI = [.002, .09]). Thus, Hypothesis 3a is supported.

Finally, GTL and SSTL together accounted for 5.9% variance in OCB ($p = .006$). Contrary to our prediction, SSTL explained significant unique variance in OCB ($\Delta R^2 = .04$, $p = .01$) but not GTL ($\Delta R^2 = .01$, $p = .36$). RWA showed that GTL accounted for 22.81% ($R^2_{RW} = .01$), while SSTL accounted for 77.19% ($R^2_{RW} = .05$). SSTL was more important than GTL (95% CI = [-.10, -.003]); thus, Hypothesis 3b was not supported.

Results from High-Concern Sample (n =227)

The pattern of results from the high-concern sample was markedly different than from the low-concern sample. CFA results are presented in Table 7. The six-factor model provided the best fit to the data (χ^2 (174) = 331.53, $p < .001$, CFI = .96, TLI = .96, RMSEA = .06, SRMR = .04), significantly better than the five-factor model (Model 3: $\Delta\chi^2$ (5) = 25.26, $p < .001$) but not the bifactor model (Model 2: $\Delta\chi^2$ (6) = 8.49, $p > .05$). Thus, Hypothesis 1 was supported. We still retain GTL and SSTL as separate albeit correlated factors, as this represents the most parsimonious model.

Table 8 summarizes the results from regression and RWA. GTL and SSTL together accounted for significant variance in safety compliance ($R^2 = .05$, $p = .005$), safety participation ($R^2 = .07$, $p < .001$), in-role performance ($R^2 = .07$, $p < .001$), and OCB ($R^2 = .15$, $p < .001$).

Notably, GTL no longer predicted incremental variance above and beyond SSTL in any outcome. Similarly, SSTL did not predict incremental variance above and beyond GTL in any outcome except OCB (ΔR^2 = .02, p = .04). RWA showed that GTL and SSTL were equally important predictors of safety compliance (R^2_{RW} = .02 and R^2_{RW} = .02, respectively; 95% CI = [-.02, .03]) and in-role performance (R^2_{RW} = .04 and R^2_{RW} = .04, respectively; 95% CI = [-.02, .04]). RWA also showed that SSTL and GTL were equally important predictors of safety participation (R^2_{RW} = .04 and R^2_{RW} = .03, respectively; 95% CI = [-.05, .007]) and OCB (R^2_{RW} = .08 and R^2_{RW} = .07, respectively; 95% CI = [-.05, .03]). Thus, Hypothesis 2b and 3b were not supported.

Overall, SSTL was the stronger predictor of safety participation and GTL was the stronger predictor of in-role performance only in the low-concern sample. Thus, Hypotheses 4b and 5a were supported. Contrary to our prediction, neither GTL nor SSTL was better in predicting safety compliance in both subsamples. Similarly, SSTL was the stronger predictor of OCB in the low-concern sample, and partial evidence suggested that SSTL is the stronger predictor of OCB in the high-concern sample. Thus, Hypothesis 4a and 5b were not supported.

General Discussion

Drawing on paradox theory, the current research aimed to examine the distinction between GTL and SSTL, to investigate whether GTL and SSTL provided incremental validity in predicting context-specific (safety-related) and context-free (general) outcomes, and to examine their distinction in contexts with different perceived safety concern. Paradox theory offers valuable insights into our understanding of workplace safety (Hu et al., 2020; Jeschke, 2022). First, paradox theory suggests that safety and performance are generally perceived as incompatible and it is difficult to attain both simultaneously (Hu et al., 2020). Factor analyses in the two current studies suggested that GTL and SSTL are distinct, which is consistent with

findings in the safety context (e.g., Mullen & Kelloway, 2009) as well as in other contextualized leadership contexts (e.g., environmental-specific transformational leadership; Robertson & Barling, 2013, 2017). Past research (e.g., Mullen & Kelloway, 2009; Robertson & Barling, 2013, 2017) treated context-specific and context-free transformational leadership as distinct constructs based on CFA. Furthermore, we found that the effects of GTL and SSTL on employees' outcomes were substantially different between low- and high-concern contexts. Specifically, in low-concern contexts, GTL was significantly more important than SSTL was for in-role performance, and SSTL was significantly more important than GTL was for safety participation and OCB. Managers must often make trade-offs between safety and performance as they choose to prioritize one over the other. While both goals are legitimate, each would have different effects on employees' behaviors. In contrast, in high-concern contexts, GTL and SSTL appear to have similar effects as both were equally important predictors of employees' safety-related and non-safety-related outcomes. Overall, we cannot assume that a leader having the capacity to be transformational will be equally transformational toward safety and performance, and resultantly, we cannot assume that GTL and SSTL will have identical associations with employee outcomes. In fact, they seem to vary by perceived safety concern of the work environment.

At the same time, the paradox perspective entertains the possibility that managers can balance or integrate these competing goals to attain multiple goals simultaneously (Hu et al., 2020; Smith & Lewis, 2011). While GTL and SSTL remain distinct constructs, we found that their relationship with employees' outcomes were not distinguishable in high-concern contexts. Prior research shows that managers in construction sites have developed different means to bridge and balance safety and operational goals (Jeschke, 2022). Our findings strengthen this assertion by showing that GTL and SSTL are not distinguishable in high-concern contexts. In

Study 1, we examined a high-concern occupation (manual laborers in construction) and found that neither GTL nor SSTL was a better predictor of safety outcomes. In Study 2, we attempted to replicate these findings with the high-concern sample and showed that GTL and SSTL show similar relationships with both safety-related and non-safety-related outcomes. While it was not surprising that GTL and SSTL had equal effect on safety outcomes, the fact that GTL failed to show any advantage over SSTL when it comes to performance outcomes highlights how safety and performance intertwine in contexts where safety concern is perceived to be high. Apparently, in high-concern contexts, managers would be encouraged to achieve both safety and performance goals (Hu et al., 2020; Jeschke, 2022). In turn, they are more likely to adopt the "both-and" mindset which encourages combining safety and performance, recognizing their complementary values. In contrast, managers in low-concern contexts are more likely to adopt an "either/or" mindset which puts safety and performance at odds. While prior research has argued and shown that safety and performance are often considered a trade-off (Jeschke, 2022; Zohar, 2010), our study shows that perceived safety concern plays an important role in how leaders navigate the safety-performance paradox.

Contrary to the predictions that SSTL is the better predictor of safety outcomes (Mullen & Kelloway, 2009) and GTL is the better predictor of non-safety outcomes, our results did not fully support our hypotheses. Specifically, we found that SSTL is a better predictor of safety participation than GTL is, but we found partial evidence that GTL is the better predictor of safety compliance than SSTL in low-concern contexts. By way of comparison with the general outcomes, GTL was a more important predictor of in-role performance, whereas SSTL was more important as a predictor of OCB. Overall, the espoused differences between GTL and SSTL do not reflect how they predict safety-related and general outcomes. Instead, our results suggest that

GTL has more substantial effects on in-role outcomes, whereas SSTL can influence extra-role outcomes more strongly.

Taking these findings together, we advise against the existing practice of using GTL and SSTL as synonymous constructs (e.g., Clarke, 2013). It seems that the perceived safety concern in the workplace plays a pivotal role in how leaders navigate the safety paradox and how leadership behavior affects employees' outcomes. The effects of GTL and SSTL are similar only in high-concern contexts, and even then, GTL and SSTL remain distinct. This has several implications for research. First, researchers should not assume that SSTL is an appropriate and automatic contextualization for studying safety outcomes. As our results have shown, SSTL is not necessarily the better predictor of safety-related outcomes compared to GTL, and SSTL has a strong link with OCB in Study 2. Second, researchers should be mindful and explicit about their choices of using GTL and SSTL. The decision should be made based on how the researcher conceptualizes the leadership construct. For example, a measure of GTL should be used if the researcher is interested in transformational leadership behavior focusing on general job performance. Alternatively, a measure of SSTL should be used only when the researcher wants to examine transformational leadership behavior targeting safety goals specifically. The choice will also depend on the extent to which physical safety is salient in the work environment.

More generally, we advise scholars to be cautious with context-specific conceptualizations of leadership. We agree with the recommendations of Inness et al. (2010) and Hu et al. (2020) of refraining from studying workplace safety in isolation. Ultimately, safety is only one among multiple important goals that organizations must work toward, and how managers balance these competing goals clearly influences the results they can achieve. Constructs like SSTL completely disregard the fact that organizations must balance multiple

competing goals. Furthermore, the usefulness of these constructs is questionable in the very context in which they are supposed to be most valuable. In high-concern contexts, day-to-day responsibilities may naturally include safety. Thus, researchers must be mindful of the possibility that GTL may encompass safety-related leadership behavior as well as the possibility that one leader can and often must demonstrate both GTL and SSTL simultaneously.

Study Limitations

The current set of studies have several limitations worth noting. First, both studies were potentially affected by low statistical power due to the complexity of the analysis. Yet, despite these concerns, we showed that GTL and SSTL had distinct patterns of relationship with safety-specific and general outcomes. It is also important to recognize that the same participants completed the leadership scales and outcomes measures at the same time in Study 1 and with a two-week gap in Study 2. Single-source bias among highly correlated constructs may further inflate the relationships studied in this paper. To mitigate this concern, future research would ideally demonstrate how GTL and SSTL are related to other-source safety or other-source performance outcomes such as safety behavior observations or supervisor-rated performance appraisals.

Second, our comparison of GTL and SSTL is incomplete as a test of SSTL's validity. While we showed that GTL and SSTL did in fact differ in how they are associated with safety-related and general work outcomes, we cannot definitively conclude whether the perceived differences were due to the safety-focused component alone or the joint effect of the safety focus and transformational leadership behaviors. The amalgamation of transformational leadership and safety may be greater than the sum of its parts. Although Swift and Peterson (2019) argued that contextualization could potentially help to increase the validity of individual differences in

predicting context-specific outcomes, they stressed that contextualization, if done incorrectly, can artificially increase predictive validity by increasing the similarity in item content between the measures. In the current paper, we showed that recognizing shared item content between predictor and criteria matter in low-concern contexts but not high-concern contexts. More generally, contextualization has been applied with success mainly for measures of traits (e.g., Bing et al., 2004; Hunthausen et al., 2003), and it remains important to ensure that the contextualized measure still represents the same trait (Swift & Peterson, 2019). In this regard, we believe that a contextualized measure of behavior like SSTL is, as Cooper and Richardson (1986) have coined it, an "unfair comparison" with GTL. Future research should compare SSTL against other models of safety leadership to determine whether there are meaningful added values when specifically combining transformational leadership and safety.

A further confound is that the SSTL measure (Barling et al., 2002) was adapted from the MLQ (Bass & Avolio, 1995), whereas the GTL measure used in the current studies is Carless et al.'s (2000) Global Transformational Leadership. As such, even though the length and reliability of these two scales were essentially identical in both studies, a fairer comparison (Cooper & Richardson, 1986) of SSTL and GTL in future research would be items for both SSTL and GTL derived from the MLQ. That said, the measure we used has been shown to correlate strongly with the subdimensions of the MLQ (*rs* = .83-.87; Carless et al., 2000). Ultimately, comparing GTL and SSTL in experimental designs would enable the strongest statistical conclusion validity. Notably, such comparison is uncommon in safety research (cf. Probst, 2002) but increasingly frequent and encouraged in leadership research (Eden, 2021).

Still, as we demonstrated in our study, the value of SSTL versus GTL in high-concern contexts is questionable. Increasingly, there are multiple approaches to safety leadership (e.g.,

Casey et al., 2019; Wong et al., 2015). Unless future research can demonstrate clearly how these models differ from one another and from existing models and constructs, introducing new models of safety leadership will dilute our understanding of how leaders' behaviors influence employees' workplace safety. To ebb unnecessary construct proliferation, future research should examine whether and how these different conceptualizations of SSTL differ from one another or add incremental value. 'Construct clean-up' in the burgeoning safety leadership space would be a worthwhile endeavor, particularly as the present results have shown that contextualizing transformational leadership can change significantly depending on context.

Future Research

There are multiple directions future research can take considering the paradox perspective for safety research. Past research (e.g., Jeschke, 2022) and the current findings show that leaders in high-concern versus low-concern contexts may differ in how they approach the safety-performance paradox. Future research should consider what individual and contextual factors can constitute these competencies. For example, in terms of individual factors, Miron-Spektor et al. (2018) showed that individuals vary in their paradox mindset—a way to interpret the world that enables the recognition and acceptance of paradoxical tensions. Miron-Spektor and colleagues (2011; 2018; Leung et al., 2018) demonstrated that a paradox mindset can affect individuals' abilities to generate novel and useful ideas and solutions to work problems. It is possible that a paradox mindset can affect how managers and employees approach and balance safety and competing demands. Most interestingly, paradox mindset can be trained and developed (Miron-Spektor & Paletz, 2020), allowing organizations to improve their ability to tackle safety demands in conjunction with other equally important goals. On the contextual side, future research can examine the extent to which managers and employees experience tensions

and pressure in meeting safety and performance demands. While it appears that the pressure and tension in high-concern contexts can help managers to develop their ability to address the safety-performance paradox, too much tension can quickly become debilitating (Smith & Lewis, 2011) and hinder the extent to which safety and performance can potentially complement one another.

Recent research shows that paradoxical leadership behaviors (i.e., behaviors that are seemingly contradictory but interrelated, and are required to meet multiple important demands simultaneously; Zhang et al., 2015) can have a positive effect on employees' outcomes. Specifically, Zhang et al. (2015) found that paradoxical leadership behaviors can improve employees' proficiency, adaptability, and proactivity. Paradoxical leadership can also promote employees' paradox mindset through modeling leaders' behaviors (Hu et al., 2020). Similarly, future research can explore whether paradoxical behavior in the safety domain can potentially have a positive impact on employees' outcomes within and beyond the safety domain. For example, paradoxical leadership can enable the maximization of both safety and performance, as it allows employees to overcome the "either/or" mindset to strive for ostensibly competing goals.

Conclusion

Drawing from paradox theory, our research compares GTL and SSTL and their relationships with safety-related and non-safety outcomes. Consistent with the extant literature, we show that GTL and SSTL are distinct. Most importantly, the effects of GTL and SSTL vary depending on the perceived safety concern of the workplace. GTL and SSTL have identical effects on both safety-related and general performance outcomes in high-concern contexts, yet SSTL was stronger predictor of discretionary behaviors—both safety participation and OCB—than GTL was in low-concern contexts. To date, GTL and SSTL have been often used interchangeably without much conceptual or empirical contemplation. Our findings highlight the

importance of distinguishing between context-free and context-specific transformational leadership with safety as an exemplar. Furthermore, our findings demonstrate the value of examining safety in relation to other organizational goals, as the safety-performance paradox can affect how leaders approach these competing goals and in turn influences employees' outcomes. We therefore encourage future research to extend our findings to new domain areas such as "healthy leadership" (Rudolph et al., 2020), in a more nuanced way to more well-established contextualizations of transformational leadership (e.g., environmental-specific transformational leadership and the salience of environmental issues in a given work environment), and more generally to consider further how contextualization may change the nature of the transformational leadership construct.

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Table 1

Descriptive Statistics and Correlations between Measures in Study 1 (N = 148)

Measures	*M*	*SD*	1	2	3	4
1. GTL	3.60	.81	*.90*			
2. SSTL	3.64	.90	.81***	*.92*		
3. Safety compliance	4.33	.69	.24**	.27**	*.81*	
4. Safety participation	4.04	.69	.33***	.40***	.50***	*.76*

Note. ** $p < .01$. *** $p < .001$. Cronbach alphas are on the diagonal in italics. GTL = general transformational leadership. SSTL = safety-specific transformational leadership.

Table 2

Confirmatory Factor Analyses of Study Measures (Study 1)

Model number (details)	χ^2	*df*	$\Delta\chi^2$	Δdf	RMSEA	CFI	TLI	SRMR
1. 4-factor model: GTL, SSTL, SC, SP	87.47***	48	-	-	.07	.96	.95	.05
2. Bifactor model: TL, GTLr, SSTLr, SC, SP	99.09***	44	11.62*	4	.09	.95	.93	.20
3. 3-factor model: combines GTL and SSTL, SC, and SP	123.93***	51	36.46***	3	.10	.93	.92	.05
4. 1-factor model	375.07***	54	287.60***	6	.20	.71	.65	.16
5. 4-factor model with constrained variance	131.72***	52			.10	.93	.91	.35
6. 4-factor model with common wording factor	137.50***	44	5.78	8	.12	.92	.87	.48

Note. * $p < .05$. *** $p < .001$. GTL = general transformational leadership. SSTL = safety-specific transformational leadership. SC = safety compliance. SP = safety participation. TL = general factor representing the shared variance between GTL and SSTL. GTLr = the residual of GTL after accounting for the shared factor. SSTLr = the residual of SSTL after accounting for the shared factor. RMSEA = root mean square error of approximation. CFI = comparative fit index. TLI = Tucker-Lewis Index. SRMR = standardized root mean residual. Model 2 consists of a general latent factor where all indicators of GTL and SSTL load on to and two other latent factors accounting for unique variance of GTL and SSTL, respectively. Model 6 represents our test for the common wording factor (against Model 5).

Table 3

Variance Explained and Relative Weight of GTL and SSTL in Predicting Safety-Related Outcomes (Study 1)

	Safety compliance			Safety participation		
	R^2	ΔR^2	*RW*(%)	R^2	ΔR^2	*RW*(%)
GTL	.06**	.00	39.73%	.11***	.00	34.34%
SSTL	.07***	.02	60.27%	.16***	.05**	65.66%
Total R^2	.07**			.16***		

Note. ** $p < .01$. *** $p < .001$. GTL = general transformational leadership. SSTL = safety-specific transformational leadership. R^2 = variance explained when entered in first step regression. ΔR^2 = additional variance explained when entered in second step regression. *RW* = relative weight. Total R^2 = total variance explained by both GTL and SSTL.

Table 4

Descriptive Statistics and Correlations Between Measures in Study 2

Measures	M_{low}	SD_{low}	1	2	3	4	5	6	M_{high}	SD_{high}
1. GTL	3.42	1.19	*.97/.95*	.93***	.23***	.25***	.28***	.35***	3.66	.97
2. SSTL	3.10	1.19	.84***	*.97/.96*	.21**	.27***	.28***	.36***	3.55	1.02
3. Safety compliance	4.45	.72	.10	.06	*.91/.90*	.62***	.61***	.30***	4.30	.80
4. Safety participation	3.79	1.14	.11	.28***	.39***	*.90/.84*	.46***	.42***	4.05	.83
5. In-role performance	4.07	.75	.20**	.07	.50***	.23**	*.90/.89*	.35***	4.01	.85
6. OCB	2.98	.82	.15*	.23**	.13	.37***	.23**	*.88/.90*	3.43	.86

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Low = low-concern. High = high-concern. The correlations from the low-concern sample are below the diagonal (N_{low} = 187), the correlations from the high-concern sample are above the diagonal (N_{high} = 227). GTL = general transformational leadership. SSTL = safety-specific transformational leadership. OCB = organizational citizenship behaviors. Cronbach alphas are in italics on the diagonal: the alpha of a scale in the low-concern sample is before the slash, the alpha of a scale in the high-concern sample is after the slash.

Table 5

Results of Confirmatory Factor Analyses of Study Measures (Study 2 – Low-concern sample)

Model number (details)	χ^2	*df*	$\Delta\chi^2$	Δdf	RMSEA	CFI	TLI	SRMR
1. 6 factors: GTL, SSTL, SC, SP, IRP, OCB	366.17***	174	-	-	.08	.95	.94	.04
2. Bifactor: TL, GTLr, SSTLr, SC, SP, IRP, OCB	415.22***	168	49.05***	6	.09	.94	.92	.09
3. 5 factors: combines GTL and SSTL	720.46***	179	354.29***	5	.13	.86	.83	.06
4. 1-factor model	2515.75***	189	2149.58***	15	.26	.39	.33	.25
5. 6-factor model with common wording factor	330.35***	164	35.82***	10	.07	.96	.94	.07

Note. *** $p < .001$. GTL = general transformational leadership. SSTL = safety-specific transformational leadership. SC = safety compliance. SP = safety participation. IRP = in-role performance. OCB = organizational citizenship behaviors. TL = general factor representing the shared variance between GTL and SSTL. GTLr = the residual of GTL after accounting for the shared factor. SSTLr = the residual of SSTL after accounting for the shared factor. RMSEA = root means square error of approximation. CFI = comparative fit index. TLI = Tucker-Lewis Index. SRMR = standardized root mean residual. Model 2 consists of a general latent factor where all indicators of GTL and SSTL load on to and two other latent factors accounting for unique variance of GTL and SSTL, respectively. Model 6 represents our test for the common wording factor (against Model 1).

Table 6

Variance Explained and Relative Weight of GTL and SSTL in Predicting Safety-Related and General Outcomes (Study 2 – Low-concern sample)

	Safety compliance			Safety participation			In-role performance			OCB		
	R^2	ΔR^2	*RW* (%)	R^2	ΔR^2	*RW* (%)	R^2	ΔR^2	*RW* (%)	R^2	ΔR^2	*RW*(%)
GTL	.013	.009	77.01%	.009	.057***	25.55%	.036*	.075***	72.96%	.024*	.005	22.81%
SSTL	.005	.001	22.99%	.077***	.125***	74.45%	.002	.041**	27.04%	.055**	.035*	77.19%
Total R^2	.014			.134***			.077***			.059**		

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. GTL = general transformational leadership. SSTL = safety-specific transformational leadership. OCB = organizational citizenship behavior. R^2 = variance explained when entered in first step regression. ΔR^2 = additional variance explained when entered in second step regression. *RW* = relative weight. Total R^2 = total variance explained by both GTL and SSTL.

Table 7

Results of Confirmatory Factor Analyses of Study Measures (Study 2 – High-concern sample)

Model number (details)	χ^2	*df*	$\Delta\chi^2$	Δdf	RMSEA	CFI	TLI	SRMR
1. 6 factors: GTL, SSTL, SC, SP, IRP, OCB	331.53***	174	-	-	.06	.96	.96	.04
2. Bifactor: TL, GTLr, SSTLr, SC, SP, IRP, OCB	323.04***	168	8.49	6	.06	.96	.95	.07
3. 5 factors: combines GTL and SSTL	356.79***	179	25.26***	5	.07	.96	.95	.04
4. 1-factor model	2276.83***	189	1945.30***	15	.22	.51	.45	.24
5. 4-factor model with constrained variance	370.84***	180	-	-	.07	.96	.95	.17
6. 6-factor model with common wording factor	384.86***	170	14.02	10	.08	.95	.94	.29

Note. *** $p < .001$. GTL = general transformational leadership. SSTL = safety-specific transformational leadership. SC = safety compliance. SP = safety participation. IRP = in-role performance. OCB = organizational citizenship behaviors. TL = general factor representing the shared variance between GTL and SSTL. GTLr = the residual of GTL after accounting for the shared factor. SSTLr = the residual of SSTL after accounting for the shared factor. RMSEA = root means square error of approximation. CFI = comparative fit index. TLI = Tucker-Lewis Index. SRMR = standardized root mean residual. Model 2 consists of a general latent factor where all indicators of GTL and SSTL load on to and two other latent factors accounting for unique variance of GTL and SSTL, respectively. Model 6 represents our test for the common wording factor (against Model 5).

Table 8

Variance Explained and Relative Weight of GTL and SSTL in Predicting Safety-Related and General Outcomes (Study 2 – High-concern sample)

	Safety compliance			Safety participation			In-role performance			OCB		
	R^2	ΔR^2	*RW* (%)	R^2	ΔR^2	*RW* (%)	R^2	ΔR^2	*RW* (%)	R^2	ΔR^2	*RW*(%)
GTL	.049***	.004	50.45%	.055***	.000	38.18%	.068***	.002	53.00%	.133***	.000	46.95%
SSTL	.046**	.000	49.55%	.067***	.013	61.82%	.069***	.003	47.00%	.15***	.017*	53.05%
Total R^2	.05**			.068***			.071***			.15***		

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. GTL = general transformational leadership. SSTL = safety-specific transformational leadership. OCB = organizational citizenship behavior. R^2 = variance explained when entered in first step regression. ΔR^2 = additional variance explained when entered in second step regression. *RW* = relative weight. Total R^2 = total variance explained by both GTL and SSTL.