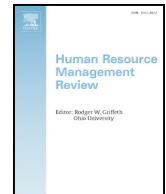




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Psychological safety: A systematic review of the literature

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ABSTRACT

Since the concept of psychological safety was introduced, empirical research on its antecedents, outcomes, and moderators at different levels of analysis has proliferated. Given a burgeoning body of empirical evidence, a systematic review of the psychological safety literature is warranted. As well as reviewing empirical work on psychological safety, the present article highlights gaps in the literature and provides direction for future work. In doing so, it highlights the need to advance our understanding of psychological safety through the integration of key theoretical perspectives to explain how psychological safety develops and influences work outcomes at different levels of analysis. Suggestions for future empirical research to advance our understanding of psychological safety are also provided.

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1. Introduction

In the contemporary business world, organizations are increasingly requiring their employees to contribute to the continuous improvement of organizational processes and practices through behaviors that enable learning to occur (e.g., voicing new ideas, collaborating with other members of the organization, and experimenting with new ways of doing things; Edmondson, 1999; Nembhard & Edmondson, 2011). While such activities may potentially benefit the organization, they carry certain risks for the individual. For example, the voicing of new ideas might challenge the established way of doing things and go against the vested interests of other members of the organization (Detert & Burris, 2007; Edmondson, Bohmer, & Pisano, 2001). In addition, experimentation with new approaches in the workplace might ultimately be unsuccessful, viewed as a failure, and lead the individuals involved to be seen in a negative light (Van Dyne & LePine, 1998). As a result, there is growing evidence to indicate that such risks may lead employees not to contribute to learning processes, and thereby inhibit both individual and organizational learning (Detert & Burris, 2007). The provision of a psychologically safe work environment (i.e., one in which employees feel safe to voice ideas, willingly seek feedback, provide honest feedback, collaborate, take risks and experiment, is one way to overcome such threats to individual and organizational learning; Edmondson, 1999). For example, in recent longitudinal work by Google's People Analytics Unit, psychological safety was identified as the number one characteristic of successful high-performing teams (Bergmann & Schaeppi, 2016). Psychologically safety is especially important in work environments where employee and customer safety are paramount, such as the healthcare or aviation industries, as it has been shown to be critical in reducing employee errors and enhancing safety (Leroy et al., 2012; Nembhard & Edmondson, 2011), and been shown to increase team and individual learning across multiple organizations (e.g., Liu, Hu, Li, Wang, & Lin, 2014; Ortega, Sanchez-Manzanares, Gil, & Rico, 2010). Given the importance of psychologically-safe work environments to organizations, their employees and their customers, the present article reviews prior scholarship on psychological safety.

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Although several definitions of psychological safety have been proposed, the majority of studies have followed Edmondson (1999) by defining it as a shared belief amongst individuals as to whether it is safe to engage in interpersonal risk-taking in the workplace (Edmondson, Dillon, & Roloff, 2007; Edmondson & Lei, 2014). In a psychologically safe work environment, employees feel that their colleagues will not reject people for being themselves or saying what they think, respect each other's competence, are interested in each other as people, have positive intentions to one another, are able to engage in constructive conflict or confrontation, and feel that it is safe to experiment and take risks (Edmondson, 1999). Behaviorally, psychological safety leads employees to engage in open communication, voice their concerns, and seek greater feedback; all of which are interpersonally risky behaviors (Pearsall & Ellis, 2011). This, in turn, has been found to influence a range of workplace outcomes (e.g., learning and performance) at different levels of analysis (Edmondson & Lei, 2014). Although psychological safety shares some overlap with trust, psychological safety is conceptually different as it focuses on how group members perceive a group norm, whilst trust focuses on how one person views another.

Since Kahn's (1990) and Edmondson's (1999) initial work on psychological safety at the individual and team levels of analysis, empirical research on its antecedents, outcomes, and moderators has proliferated (Baer & Frese, 2003; Kark & Carmeli, 2009). By the end of 2015 there were >83 published articles on psychological safety (78 of which are empirical), including a meta-analysis of the relationships among psychological safety and team performance/learning (Sanner & Bunderson, 2013), a meta-analysis of the antecedents and outcomes of psychological safety (Frazier, Fainshmidt, Klingner, Pezeshkan, & Vacheva, 2016), and a limited review of prior work (Edmondson & Lei, 2014). Although the meta-analyses provide us with some knowledge of the antecedents, outcomes, and boundary conditions of the relationship between psychological safety and its antecedents/outcomes, and the prior review provides insight into extant scholarship on psychological safety, the present article builds on this previous work to make a significant contribution in a number of ways.

First, by examining a larger number of published articles (83 studies compared to 25 studies for the Sanner and Bunderson meta-analysis, 78 for the Frazier et al. meta-analysis,¹ and fewer than 30 studies for Edmondson and Lei's [2014] review), we undertake a far more systematic review of prior work, delivering a thorough analysis of the state of the literature. As well as examining prior research on all the antecedents and outcomes of psychological safety, many of which were not the focus of prior empirical work, we offer a greater theoretical analysis of the past literature than both the Frazier et al. and Sanner and Bunderson meta-analyses. In addition, we examine the moderators of relations among psychological safety and its outcomes, and work in which psychological safety is treated as a moderator. This allows us to better elucidate the complex nomological network in which psychological safety is embedded. Although Edmondson and Lei's (2014) review looked at the antecedents and outcomes of psychological safety, their work did not cover more recent articles that have made substantive theoretical and empirical advancements (e.g. Gu et al., 2013; Halbesleben & Rathert, 2008; Liu et al., 2014; Post, 2012; Roussin & Webber, 2012; Roussin, MacLean, Rudolph, 2016; Singh, Winkel, & Selvarajan, 2013), including recent work that has begun to look at the negative aspects of psychological safety (Pearsall & Ellis, 2011). Edmondson and Lei (2014), like Frazier et al. (2016), also did little to highlight the theoretical perspectives that have been adopted by researchers to explain how psychological safety develops and influences work outcomes.

We make a second important contribution by highlighting opportunities for theoretical advancement of the field through the integration of different theoretical perspectives to explain the relationship between psychological safety and its antecedents/outcomes. Currently, theoretical perspectives such as social learning, social exchange and social identity theories have predominantly been used by researchers to explain the processes by which psychological safety develops and influences outcomes. Our review calls upon researchers to utilize alternate theories such as the Conservation of Resources Theory (Hobfoll, 1989) to explain how the psychological safety engendered through access to resources in the work environment motivates employees to invest their resources at work to help others, and stimulate learning, growth and development. In addition, we highlight how the incorporation of person-situation theoretical perspectives such as Trait Activation Theory (Tett & Guterman, 2000) might help to explain how the psychological safety climate strengthens the behavioral manifestation of certain personality traits.

Finally, we also provide advice for advancing empirical research. In addition to providing recommendations concerning the measurement of psychological safety, we also call on researchers to: (1) adopt alternative methodologies to study psychological safety, (2) conduct additional research to investigate the influence of culture on the development and deployment of psychological safety, (3) investigate the potential negative effects of psychological safety and (4) conduct more multi- and cross-level work to understand the relative influence of individual-, team-, and organizational-level antecedents on psychological safety.

As well as advancing theoretical and empirical knowledge of psychological safety, our review of the literature has important practical implications for organizations. Understanding the benefits that psychological safety brings to organizations, the situations in which psychological safety is most influential, and the factors that may lead to psychological safety development, will assist leaders in designing work environments that maximize beneficial outcomes for their organizations. Psychological safety is becoming increasingly important to organizational success in today's business environment, given the requirements for employees to share information and exchange ideas with other team and organizational members in the attainment of shared goals (Edmondson & Lei, 2014). A growing proportion of work in organizations is highly specialized and complex in nature, and therefore requires greater collaboration among individuals than in the past. In the following sections we set out how we conducted our literature search before reviewing how psychological safety has been defined and measured, and examining its antecedents and outcomes.

¹ We did not include unpublished work in the meta-analysis in calculating these figures. Neither did we include empirical studies that adopted the participative safety dimension from West's (1990) team climate scale (6 studies), nor empirical studies which did not measure psychological safety, but similar concepts such as social support and trust which overlap with psychological safety. Although Edmondson and Lei's (2014) did not report the number of studies in their review, we calculated this figure by examining the content of articles included in the review.

2. Literature review process

2.1. Inclusion and exclusion criteria

We set three inclusion/exclusion criteria prior to undertaking our literature search. First, articles had to be published between 1990 (the year in which Kahn did his seminal work on psychological safety) and the end of 2015. Second, we only included studies that mentioned the words psychological safety in their title, abstract, or keywords or included psychological safety in their empirical analysis. Third, we only included studies that focused on psychological safety in work environments; studies with student or non-working adult samples were excluded. Finally, we only included articles that focused on the antecedents and outcomes of psychological safety, or those that examined how psychological safety interacted with other variables to predict outcomes.

2.2. Literature search

In line with best practice (Short, 2009), we searched a number of academic databases for articles (including: Web of Science, Google Scholar, EBSCO Host, Emerald, PsycInfo, Science Direct and ProQuest) using the keywords psychological safety. In addition, we examined the reference lists of all retrieved articles for additional studies on psychological safety and we examined all studies that had cited the retrieved articles to locate additional literature. This led to the identification of 83 articles for inclusion in our review, 78 of which were empirical studies.

3. A review of the psychological safety literature

3.1. Defining and measuring psychological safety

The construct of psychological safety is grounded in the seminal work conducted by Schein and Bennis (1965) on organizational change. They described it as the extent to which individuals feel secure and confident in their ability to manage change. Since then other researchers have explored the meaning of psychological safety in work settings. A quarter of a century after Schein and Bennis's (1965) seminal work, Kahn's (1990, p.708) work led to renewed focus on psychological safety. In conceptualizing psychological safety as an individual's perceptions as to whether he or she is comfortable to show and employ his(her)self without fear of negative consequences to self-image, status, or career, he argued that people are more likely to feel psychologically safe when they have trusting and supportive interpersonal relationships with work colleagues (Kahn, 1990). More recently, Edmondson (1999) argued that psychological safety is better treated as a team-level climate and defined it as the "shared belief held by members of a team that the team is safe for interpersonal risk taking" (p. 350). This definition is divergent from Kahn's definition that it is a perception emanating from the individual. Based on qualitative work she developed and validated a 7-item scale to measure team psychological safety. This measure includes items that capture shared perceptions amongst team members as to whether they believe that others will not reject members for being themselves, team members care about each other as individuals, team members have positive intentions to one another, and team members respect the competence of others.

Our review identified 78 empirical studies, conducted over the past 25 years, which have focused on examining the antecedents and outcomes of psychological safety. Among these, 740 studies utilized a quantitative survey methodology and the remainder employed a qualitative interview methodology. Studies adopting a qualitative interview methodology have helped to generate detailed explanations as to why and how psychological safety develops and influences work outcomes. They have typically been used as a basis from which to guide quantitative work. In contrast, studies adopting a quantitative survey methodology have furthered our understanding of the strength of links between psychological safety and its antecedents/outcomes.

3.1.1. Individual-level measures

Our review identified 29 studies that have measured employees' individually-held perceptions of psychological safety within dyadic-relationships, teams, or organizations. First, examining individuals' perceptions of psychological safety in dyadic relationships, studies by Tynan (2005) and Detert and Burris (2007) adapted Edmondson's (1999) team-level measure to capture self and other psychological safety, and manager-focused psychological safety, respectively. In contrast, Roussin and Webber (2012) used a measure of manager-focused psychological safety developed by Edmondson and Woolley (2003) and Hetzner, Gartmeier, Heid, and Gruber (2011) constructed their own measures of supervisor- and colleague-focused psychological safety, based on items from measures used in other studies. Second, a number of studies examining individually-held perceptions of psychological safety within organizations have used adapted versions of Edmondson's (1999) measure, replacing the referent "team" with "organization" (Carmeli, Brueller, & Dutton, 2009; Carmeli & Gittel, 2009; Carmeli, Reiter-Palmon, & Ziv, 2010; Carmeli & Zisu, 2009; Chen, Liao, & Wen, 2014; Kark & Carmeli, 2009; Madjar & Ortiz-Walters, 2009). However, Singh et al. (2013) adopted a measure from Chrobot-Mason and Aramovich (2004), De Clercq and Rius (2007) used a measure from Brown and Leigh (1996), Liang, Farh, and Farh (2012) developed their own measure using items from other studies, including May, Gilson, and Harter (2004), and Xu and Yang (2010) constructed their own measure.

3.1.2. Team-level measures

Our review identified 42 studies that have measured psychological safety at the team level. Most of these studies used Edmondson's (1999) 7-item Psychological Safety Scale or abbreviated versions of this scale. However, other researchers have

developed their own measures or adapted measures that included items from Edmondson (1999) and items from other scales (Tucker, 2007). In contrast, Hirak, Pang, Carmeli, and Schaubroeck (2012) used a measure of unit-level psychological strength climate taken from Anderson and West (1994). In these studies, team members' perceptions of the psychological safety within the team were aggregated to the team level, based on high intra-class correlation coefficients (ICCs) between team members.

3.1.3. Organizational-level measures

Only two prior studies have measured psychological safety at the organizational level (Baer & Frese, 2003; Carmeli, 2007). Both studies measured employee perceptions of psychological safety within their organization, based on items adapted from Edmondson's (1999) team-level measure, replacing the referent team with organization. Scores on the measure were then aggregated to the organizational level based on high ICCs between organizational members. Although these studies suggest that individual perceptions of psychological safety can be aggregated to the organizational-level, it is questionable as to whether this is likely to be the case in all organizations, as there should be relatively high levels of agreement between all members of the organization for an organizational climate of psychological safety to exist. As employee perceptions of psychological safety are typically influenced by leadership and team characteristics (e.g., Carmeli et al., 2010; Chen & Tjosvold, 2012), high levels of agreement between organizational members is unlikely, especially in larger firms where employees are unlikely to have shared experiences of leadership and team norms. Although a climate of psychological safety might exist in smaller organizations, whose members regularly work with each other or in organizations with strong corporate cultures, this should be confirmed through further empirical research. In general, however, we believe that psychological safety is likely to be more potent and meaningful at the team level, rather than the organizational level.

3.1.4. Measurement critique and recommendations

The majority of studies examining psychological safety have been conducted at the team level and almost invariably have utilized Edmondson's 7-item scale (or short-form versions) to operationalize the construct. More common among studies examining individual perceptions of psychological safety is the use of measures of similar constructs as proxies for psychological safety, or scales developed by the authors themselves. For example, some researchers have used psychological climate scales that capture the extent to which the climate is motivating and involving as a proxy for psychological safety (e.g., De Clercq & Rius, 2007). The use of proxy measures, however, is problematic as the constructs they tap may diverge from Edmondson's (1999) precise constitutive definition of psychological safety. A lack of correspondence between the conceptual definition of the construct and the operational procedure to measure it, often results in compromised construct validity (Schwab, 1980). Moreover, all of the studies that we reviewed, that used "in-house" measures developed by researchers themselves, applied them to test substantive questions without first establishing that their measures were psychometrically sound. Such measures may lack validity and therefore have the potential to result in spurious findings (DeVellis, 2003).

In contrast, Edmondson's (1999) 7-item measure was developed based on rigorous scale construction protocols and has been subjected to extensive validation tests, which have invariably shown that the measure has strong content, criterion, and construct validity. In addition, Edmondson's (1999) measure of psychological safety has consistently been found to be reliable across diverse samples as evidenced by the fact that all of the studies that we reviewed, that used her 7-item measure, reported very good internal consistency reliability estimates.

In our view, the continued use of multiple measures of psychological safety is likely to hinder advancement in the field because the results of different versions of the construct measure are not readily comparable (Hawcroft & Milfont, 2010). As a consequence, we believe that our understanding of psychological safety would be greatly improved if there was consensus regarding the most valid and reliable measures. In light of the strong psychometric properties of Edmondson's (1999) 7-item scale, which suggest that it is isomorphic (similar in meaning) at different levels, and the fact that nearly all of the extant studies examining psychological safety at the team or organizational levels applied both Edmondson's (1999) definition of the construct and her measure (changing the referent to "organization" in the latter), we recommend it as the measure of choice for use in future studies in preference to proxy or "in-house" measures of psychological safety.

Finally, while there have been studies conducted at different levels of analysis, it is also the case that there has been a paucity of cross-level and multilevel psychological safety research. The scarcity of such studies not only limits our understanding of the nomological net of psychological safety, that is inherently mixed-level involving micro and macro antecedents and outcomes (which we discuss below in Section 5), but also limits our capacity to understand whether psychological safety varies across organizations, as well as across teams within organizations. The study by Edmondson and Mogelof (2005) was the only study identified in our review that attempted to address this question. They examined team- and organizational-level variance in psychological safety via data from 26 innovation teams, nested in 7 organizations (i.e., data from multiple teams and organizations), collected over 3 waves. Edmondson and Mogelof (2005) found that there were team-level differences in relation to psychological safety and that organizations differed in psychological safety at the same time. These findings align with the mixed-level view of psychological safety, however, we believe that further multilevel research is required to determine whether the findings from this single study are replicable.

3.2. Antecedents of psychological safety and psychological safety as a mediator

Our review identified 44 empirical studies that have examined the antecedents of psychological safety at different levels of analysis. This work has predominantly treated psychological safety as a mediator (38 of these studies) to explain how supportive

organizational practices, supportive leadership behaviors, relationship networks, team characteristics and individual/team differences influence workplace outcomes at the individual, team and organizational-levels through the development of psychological safety. In examining these issues, researchers have begun to utilize diverse theoretical perspectives including social learning theory, social exchange theory, social identity theory, and status characteristics theory.

3.2.1. Supportive leadership behaviors

Growing research at both the individual and team level has examined the effects of supportive leadership behaviors on work outcomes through psychological safety. For example, at the individual level empirical work has established that leader inclusiveness (Bienesfeld & Grote, 2014; Carmeli et al., 2010), support (May et al., 2004), trustworthiness (Madjar & Ortiz-Walters, 2009), openness (Detert & Burris, 2007) and behavioral integrity (Palanski & Vogelgesang, 2011) strongly influence employee perceptions of psychological safety, which in turn, drive employee outcomes including voice behaviors, involvement in creative work, job performance and engagement. Similarly, at the team level employees' collective perceptions of support and coaching forwarded by the team leader (Edmondson, 1999; Roberto, 2002), leader inclusiveness (Hirak et al., 2012; Nembhard & Edmondson, 2006), trust in the leader (Li & Tan, 2012; Schaubroeck, Lam, & Peng, 2011), and the behavioral integrity of the leader (Leroy et al., 2012) have been found to foster team-level outcomes such as team learning behavior, team performance, engagement in quality improvement work, and reduction in errors amongst team members through the development of psychological safety. Other work has found that positive leadership styles such as transformational leadership (Nemanich & Vera, 2009), ethical leadership (Walumbwa & Schaubroeck, 2009), change-oriented leadership (Ortega, Van den Bossche, Sanchez-Manzanares, Rico, & Gil, 2014) and shared leadership (Liu et al., 2014) are positively and strongly related to such outcomes as employee voice behavior, team learning, and individual learning through the mediating mechanism of psychological safety.

Finally, research has established that leaders who value participation, people, and production use dyadic discovery methods rather than group-based discovery methods (Roussin, 2008; Wong, Tjosvold, & Lu, 2010), and an improvement orientation management style (Halbesleben & Rathert, 2008), are able to foster high levels of psychological safety. In explaining why a significant relationship may exist between supportive leadership behaviors and psychological safety, prior research has typically relied on key tenets from social learning theory (Bandura, 1977). Based on this theory, researchers have argued that by listening, forwarding support, and providing clear and consistent directions to subordinates, the leader is able to model to subordinates that it is safe to take risks and engage in honest communication (e.g., Hirak et al., 2012; Liu et al., 2014; Nemanich & Vera, 2009; Walumbwa & Schaubroeck, 2009). However, other researchers have argued that social exchange processes may underlie the relationship between supportive leadership and psychological safety, arguing that when followers are supported by the leader, they will reciprocate with supportive behaviors themselves, creating a psychologically safe environment for the rest of their team (e.g. Schaubroeck et al., 2011). While we acknowledge that the social exchange process may increase psychological safety, we believe it is likely that the effects will be stronger and more enduring, when psychological safety is built through learning and emulating these behaviors from the leader, rather than displaying them at a point in time in exchange for certain leadership behaviors.

3.2.2. Supportive organizational practices

At the individual level, there is growing evidence that supportive organizational practices are positively related to employee work outcomes such as organizational commitment and job performance as they heighten perceptions of psychological safety. For example, research has found that employee perceptions of organizational support (Carmeli & Zisu, 2009), access to mentoring (Chen et al., 2014), and diversity practices (Singh et al., 2013) foster work outcomes through the mediating mechanism of psychological safety. Drawing on a sample of 191 medical professionals in an Israeli medical clinic, supportive organizational practices were found to foster psychological safety through social learning processes, similar to that of supportive leadership behaviors (Carmeli & Zisu, 2009). However, Singh et al. (2013) relied on social identity theory to argue that the implementation of workplace diversity practices fosters psychological safety via employee identification with the organization in the context of US mid-sized production firms ($N = 165$). Both studies utilized a survey design, with Singh et al. (2013) using the 3-item Chrobot-Mason and Aramovich (2004) measure of psychological safety, rather than the well validated Edmondson (1999) 7-item measure.

3.2.3. Relationship networks

Growing research at the individual, team, and organizational levels has looked at social support and the social capital (resources) inherent in relationship networks as key determinants of psychological safety. At the individual level, research has established that rewarding co-worker relationships and the extent to which members of the organization interact with one another on an interpersonal basis, influence individual learning and engagement through the mediating mechanism of psychological safety (Carmeli & Gittel, 2009; Carmeli et al., 2009; May et al., 2004). Similarly, at the team level, researchers have found that relationship networks, and the social support and resources inherent in such networks, promote psychological safety and contribute to team learning, performance, and innovation. For example, researchers have found that the key drivers of psychological safety and its outcomes are: the level of prior interaction between; and familiarity among, team members (Roberto, 2002); the quality of social relationships between team members as measured by trust; network ties and collective thinking (Gu, Wang, & Wang, 2013; Huang & Jiang, 2012; Schulte, Cohen, & Klein, 2012); high quality relationships between team members and external parties (Bruegger & Carmeli, 2011); and membership of the inner-circle (Burris, Rodgers, Mannix, Hendron, & Oldroyd, 2009). Finally, at the organizational level Carmeli (2007) found that the strength of social networks between members of the organization was positively related to their ability to learn from failure through the development of psychological safety. Although most studies in this area did not explicitly address why strong relationship networks,

and the social resources inherent in such networks, foster psychological safety, a small number of researchers have proposed that social relationships may engender psychological safety through social learning processes (e.g. Carmeli, 2007; Gu et al., 2013).

3.2.4. Team characteristics

At both the individual and team level, research has begun to examine how individually-held and collective perceptions of team characteristics influence perceptions of psychological safety. For example, at the individual level researchers have found that employee perceptions of similarity in systems understanding among team members (Bendoly, 2014), and a continuous quality improvement climate in teams (Rathert, Ishqaidef, & May, 2009), influence project performance and organizational commitment respectively through higher levels of psychological safety within the team. At the team level, researchers have found that characteristics such as shared team rewards (Chen & Tjosvold, 2012), formal team structures (Bresman & Zellmer-Bruhn, 2013; Bunderson & Boumgarden, 2010), and team engagement in boundary work (buffering, spanning, and reinforcement) (Faraj & Yan, 2009) are positively associated with higher levels of team psychological safety. However, Chandrasekaran and Mishra (2012) found that only team autonomy influenced psychological safety when the project goals and processes of the team were aligned with their broader organizational goals and when there were low degrees of relative exploration (i.e., the team focused on refining existing products and processes rather than seeking to develop new products and processes). Contrary to what they expected, Lau and Murnighan (2005) found that the presence of strong faultlines within teams (i.e., the existence of sub-groups with non-overlapping demographic characteristics) led to greater psychological safety amongst team members. They argued that this may have resulted from generalization of the positive social effects within strong faultline groups to the entire team. Finally, O'Neill (2009) found that when team members were collectively responsible for bad investment decisions, psychological safety gave them the courage to admit failure, whereas when they were individually responsible, psychological safety escalated their commitment to bad investment decisions. They argued that this is due to the fact that, when there is collective responsibility, team members are less motivated to salvage a project that may fail. Although growing work has examined the influence of team characteristics on psychological safety there has been limited incorporation of theory to explain the effects of such characteristics.

3.2.5. Individual and team differences

Researchers have also found that individual and team differences such as adherence to co-worker norms and self-consciousness (May et al., 2004), status differences (Bienefeld & Grote, 2014; Nembhard & Edmondson, 2006) and team members' sequential cognitive style (i.e., thinking in a logical sequential routine) (Post, 2012) are associated with psychological safety. For example, utilizing perspectives from status characteristics theory, prior research has found that an individual's perceived status within the team (Bienefeld & Grote, 2014), and the professionally-derived status of the team (Nembhard & Edmondson, 2006), leads to outcomes such as the willingness of individuals to speak up and team engagement through enhancing psychological safety. This work suggests that the higher the status of the employee or the team, the more safe individuals will feel to speak up and share ideas.

3.3. Outcomes of psychological safety

Our review identified 62 empirical studies that focused on the outcomes of psychological safety at different levels of analysis. Given that the early conceptual development of psychological safety was grounded in the organizational learning literature, early empirical work on psychological safety typically focused mainly on learning and performance outcomes (e.g., Edmondson, 1999). Research has also examined the relationship among psychological safety and outcomes such as innovation, creativity, employee attitudes, communication, knowledge-sharing, and voice behaviors. Research examining the relationship among psychological safety and its outcomes has begun to integrate perspectives from social learning theory, social information processing theory, social identification theory, and social exchange theory (Carmeli, 2007; Chen et al., 2014; De Clercq & Rius, 2007; Liu et al., 2014; Schaubroeck et al., 2011; Singh et al., 2013).

3.3.1. Communication, knowledge sharing and voice behavior

At the individual and team level, psychological safety has been linked to communication outcomes such as greater reporting of treatment errors and more interpersonal communication (Leroy et al., 2012; Peltokorpi, 2004), as well as greater knowledge sharing among team members (Mu & Gnyawali, 2003; Siemsen, Roth, Balasubramanian, & Anand, 2009; Xu & Yang, 2010; Zhang, Fang, Wei, & Chen, 2010). Psychological safety within dyadic relationships and teams has also been shown to lead to more voice behavior among employees (Bienefeld & Grote, 2014; Detert & Burris, 2007; Liang et al., 2012; Tynan, 2005), and a reduction in silence behaviors (Brinsfield, 2013). For example, Tynan (2005) found that individuals high in other-psychological safety (i.e., they believe others feel safe in their relationships), were more likely to raise disagreement, give candid feedback, and point out errors to their supervisor.

3.3.2. Learning behavior

A growing body of research has found positive associations among employee perceptions of psychological safety and learning behavior at different levels of analysis. For example, researchers have established positive links between psychological safety and learning behavior at both the individual (Liu et al., 2014) and team levels (Bstieler & Hemmert, 2010; Ortega et al., 2010; Roberto, 2002; Stalmeljeer, Gijsselaers, Wolfhagen, Harendza, & Scherpbier, 2007; Van den Bossche, Gijsselaers, Segers, Kirschner, 2006; Wong et al., 2010). Psychological safety has also been shown to assist individuals to learn from failure (Carmeli, 2007; Carmeli & Gittel, 2009). In their meta-analytical work, Sanner and Bunderson (2013) found the correlation between team psychological safety and team learning to be 0.42 (95% CI = 0.05 to 0.85). In examining the link between psychological safety and learning, researchers have begun to adopt perspectives from the social learning and social information processing literature (e.g., Carmeli, 2007; Liu et al., 2014). This literature

suggests that through signaling it is acceptable to take risks, experiment and voice their ideas and concerns to team members, a psychologically safe work environment will foster team and individual learning.

3.3.3. Performance, innovation and creativity

As well as directly and strongly influencing performance at the individual (Singh et al., 2013) and team levels (Schaubroeck et al., 2011), psychological safety has been found to influence performance indirectly through facilitating learning behavior at both the individual (Li & Tan, 2012; Li & Yan, 2009) and team (Brueller & Carmeli, 2011; Edmondson, 1999; Hiram et al., 2012; Huang & Jiang, 2012; Kostopoulos & Bozionelos, 2011; Ortega et al., 2014) level. In their meta-analysis, Sanner and Bunderson (2013) found the indirect effect of psychological safety on team performance, through team learning, to be 0.17 (95% CI = 0.14 to 0.20). Other work has established that alternative mechanisms such as team turnover also explain the effect of psychological safety on team performance (Chandrasekaran & Mishra, 2012). Finally, at the organizational-level, Baer and Frese (2003) found that employees' collective perceptions of psychological safety were strongly and positively related to firm performance, as measured by return on assets and goal achievement.

In addition to performance, there is growing evidence of a link between employee perceptions of psychological safety within the organization and their creativity (Carmeli et al., 2010; Kark & Carmeli, 2009). Palanski and Vogelgesang (2011) also found evidence of a positive link between employee perceptions of team psychological safety and both creative thinking and risk-taking. At the team-level, research has found that team psychological safety is strongly and positively related to innovation in R&D teams (Gu et al., 2013; Post, 2012), manufacturing process innovation performance (Lee, Swink, & Pandepong, 2011) and knowledge creation (Choo, Linderman, & Schroeder, 2007). Kessel, Kratzer, and Schultz (2012) found that team psychological safety was positively related to creative team performance and this relationship was mediated by the sharing of two types of knowledge: information and know-how. However, Kayes (2006) found no evidence that psychological safety led to higher levels of critical thinking within teams. Researchers have argued that psychological safety may influence performance outcomes through fostering social exchange between the employee and organization, and enhancing the extent to which the employee identifies with the organization (Schaubroeck et al., 2011; Singh et al., 2013; Singh & Winkel, 2012).

3.3.4. Employee attitudes

At the individual level, a number of studies have established a strong and positive link between psychological safety and the work attitudes of employees such as organizational commitment (Chen et al., 2014; De Clercq & Rius, 2007; Rathert et al., 2009), work engagement (May et al., 2004; Nembhard & Edmondson, 2006) and positive attitudes towards teamwork (Ulloa & Adams, 2004). In examining the link between psychological safety and employee work attitudes, researchers have typically relied on social exchange theory to explain how the psychological safety engendered by supportive practices leads employees to reciprocate in the form of desired work attitudes (Chen et al., 2014; De Clercq & Rius, 2007).

3.3.5. Other outcomes

At the individual-level, perceptions of psychological safety within the team have also been shown to increase the likelihood that employees will engage in "work arounds", defined as work procedures undertaken to deal with blocks in workflow (Halbesleben & Rathert, 2008), and lead them reflect on events at work (Hetzner et al., 2011). Roussin and Webber (2012) established that employee perceptions of psychological safety in dyadic relationships with their manager were positively related to their initial perceived trustworthiness of new team members. They argued this resulted from the fact that psychological safety would encourage team members to engage in the social risk taking involved in extending initial trust to a new co-worker. At the team level, psychological safety has been linked to other outcomes such as lower quality relationships and task conflict (Wilkins & London, 2006), more feedback giving and seeking behavior (Wilkins & London, 2006), and frontline system improvements (Tucker, 2007). Tucker, Nembhard, and Edmondson (2007) also found that team psychological safety was associated with the use of internally focused learning activities that provide employees with the knowledge required to adapt and implement new practices in their unit, and had a subsequent impact on the implementation success of improvement projects. Finally, Edmondson et al. (2001) found that psychological safety positively influenced the successful implementation of new technology.

3.4. Factors moderating psychological safety antecedents and outcomes

A limited number of studies have focused on factors that may interact with psychological safety to predict various outcomes at different levels of analysis. In their meta-analysis, Sanner and Bunderson (2013) found that psychological safety was more strongly related to team learning and performance in task environments that benefit from learning. For example, they found that association between psychological safety and team learning to be stronger in task environments where there were higher creativity requirements ($\beta = 0.39, p < 0.01$), sense-making requirements ($\beta = 0.54, p < 0.01$), complexity ($\beta = 0.63, p < 0.01$), and social contact/impact ($\beta = 0.50, p < 0.01$). Moreover, Sanner and Bunderson (2013) found that the association between psychological safety and team performance was stronger in task environments where there were higher creativity requirements ($\beta = 0.69, p < 0.01$), sense-making requirements ($\beta = 0.31, p < 0.01$) and complexity ($\beta = 0.73, p < 0.01$). Our review also identified work that examined other boundary conditions on psychological safety-outcome relationships at different levels of analysis. At the individual-level, Roussin and Webber (2012) found that organizational identification moderated the relationship between manager-focused psychological safety and initial perceived trustworthiness of new team members, such that the relationship was positive when organizational identification was low, and non-significant when organizational identification was high. In

explaining these results, they argued that employees with higher organizational identification are less likely to be influenced by team psychological safety when determining initial perceptions of trustworthiness in new co-workers as they shift their cognitive focus to their valued relationship with the organization. Liang et al. (2012) found that psychological safety was more strongly related to promotive and prohibitive voice behavior, for employees high in felt obligation, and that it was more weakly related to promotive voice for employees high in organization-based self-esteem. At the team level, Siemsen et al. (2009) found that the relationship between psychological safety and knowledge-sharing was positively moderated by the level of confidence that employees have in what they know. Finally, Kostopoulos and Bozionelos (2011) established that task conflict moderated the relationship between team psychological safety and exploitative learning (they associated with activities that assist the team to refine and utilize existing knowledge and skills), in such a way that the relationship was stronger when there was higher task conflict.

3.5. Psychological safety as a moderator

Growing work has examined the moderating effects of psychological safety on different relationships at the individual, team and organizational levels of analysis. At an individual level, Tangirala, Kamdar, Venkataramani, and Parke (2013) found that when individuals perceived their environment to be psychologically safe, this weakened the negative relationship between achievement orientation and role conceptualization. At the team level, Martins, Schilpzand, Kirkman, Ivanaj, and Ivanaj (2013) found that when psychological safety was low, expertise diversity had a stronger negative relationship with team performance. In contrast, when psychological safety was high, team expertise diversity had a stronger positive relationship with team performance. Gibson and Gibbs (2006) found that when psychological safety was high, the negative effects of geographical dispersion, electronic dependence, dynamic structure, and national diversity on team innovation were mitigated. Pearsall and Ellis (2011) revealed that psychological safety moderated the relationship between utilitarianism and unethical outcomes, such that members of teams high in psychological safety were more likely to engage in unethical behaviors compared to those from teams that were low in psychological safety. Bradley, Postlethwaite, Klotz, Hamdani, and Brown (2012) found that task conflict only influenced team performance when team psychological safety was high. Leroy et al. (2012) established that the relationship between team priority of safety and reporting of treatment errors was stronger for teams higher in psychological safety. Finally, Kirkman, Cordery, Mathieu, Rosen, and Kukenberger (2013) found that psychological safety moderated the curvilinear relationship between nationality diversity and performance, such that the relationship was more positive at the higher end, and less positive at the lower end, for teams high in psychological safety.

At the organizational level, Baer and Frese (2003) established that at high levels of psychological safety, the relationship between process innovativeness (i.e., the use of advanced manufacturing techniques) and profitability (i.e., return on assets), was positive, whereas at low levels of organizational psychological safety, the relationship was negative.

3.6. Summary

In Fig. 1 we synthesize key observations from our review to provide an overview of the nomological network of variables to which psychological safety is related.

Our review of the literature led to a number of key observations. As can be seen in Fig. 1, although psychological safety is a multilevel construct, our review suggests that it is likely to be more potent and meaningful at the team level, as opposed to the organizational level, unless the organization is small. This may be the reason why few studies have been conducted at the organizational level. In addition, as can be seen in Fig. 1, most of the antecedents of psychological safety, at the individual and team levels, can be grouped under the rubric of supportive environments (i.e., supportive leadership, supportive relationships with colleagues, and supportive organizational practices). In the majority of studies we reviewed, psychological safety was the mechanism through which the effects of these supportive environments were transmitted to desirable outcomes, such as increased knowledge sharing, engagement, creativity, innovation, and ultimately performance. Our review also established that psychological safety is a valuable resource, especially important in hazardous work contexts where speaking up and providing feedback is imperative in order to reduce errors and improve safety. As shown in Fig. 1, across all levels, psychological safety appears to be predictive of learning and performance outcomes.

As evident in Fig. 1, task-related factors, such as the presence of task conflict or strong task environments that motivate learning, amplify the positive effects of psychological safety on performance and exploitative learning (respectively). At the individual level, employee personal beliefs and attitudes (e.g., organizational identification and felt obligation) appear to strengthen the relationships among psychological safety and positive outcomes, such as communication and admitting errors. As can be seen in Fig. 1 our review also indicates that the extant research has focused inordinately on testing the moderators of psychological safety-outcome relationships, while examination of the boundary conditions of antecedent-psychological safety relationships has been neglected.

As displayed in Fig. 1, psychological safety appears to moderate other antecedent-outcome relationships. For example, high levels of psychological safety were found to intensify the positive relationship between team expertise diversity and team performance and mitigate the negative effects of geographical dispersion, electronic dependence, dynamic structure, and national diversity on team innovation.

Although our review revealed that growing empirical work has been conducted on the antecedents and outcomes of psychological safety, there has been limited integration of theory to explain the processes by which psychological safety develops and influences work outcomes. Our review highlighted two relevant theoretical approaches that have begun to attract attention in the psychological safety literature, both of which offer a unique perspective of the positive work outcomes derived from psychological safety. The first stream invokes social learning theory to argue that supportive practices and relationships at work foster

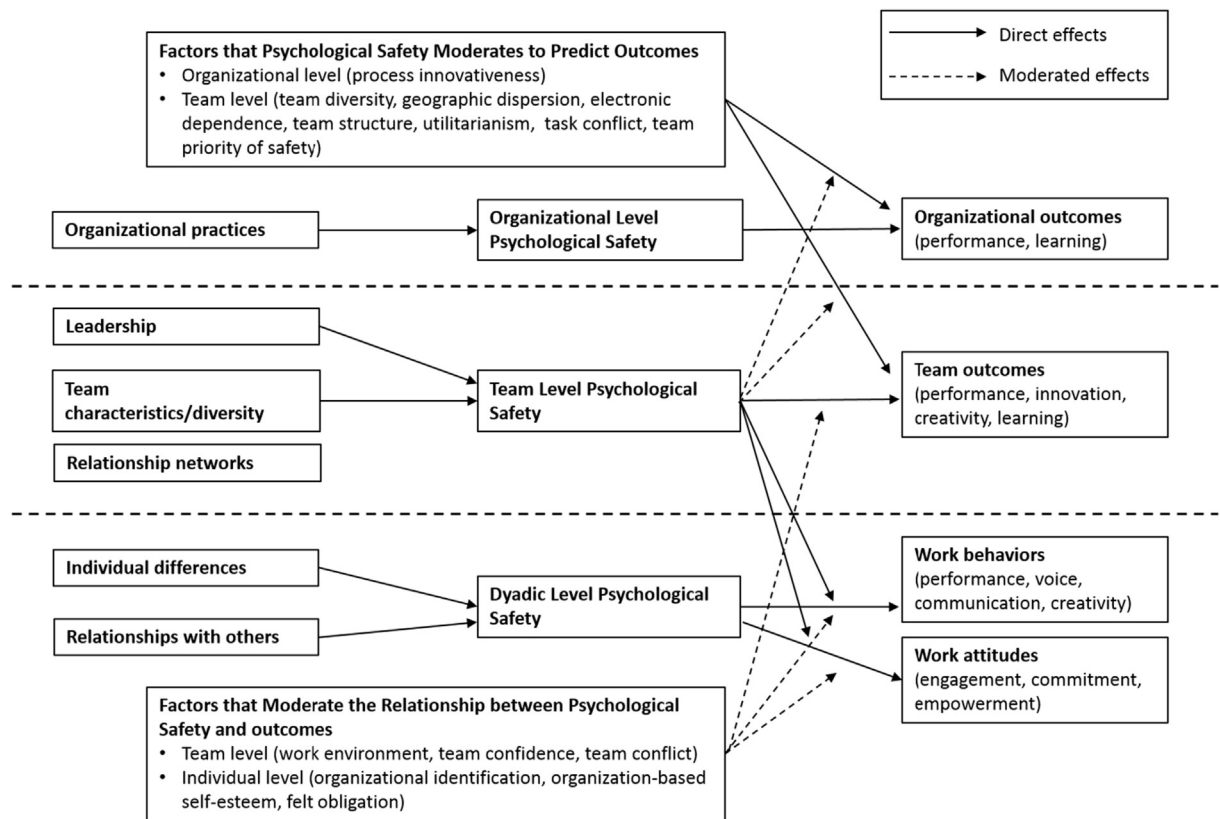


Fig. 1. Network of key variables related to psychological safety based on literature review.

psychological safety and influence outcomes such as learning, performance, innovation, and creativity. These occur through facilitation of information sharing, employee voice, feedback seeking, and experimentation (e.g., Carmeli, 2007; Liu et al., 2014).

The second stream utilizes the social exchange theory to argue that supportive practices and relationships at work may enhance psychological safety and lead employees to reciprocate in the form of positive work outcomes (e.g., Chen et al., 2014; De Clercq & Rius, 2007). While some have argued that psychological safety and subsequent positive outcomes are learned behaviors by employees, others have argued that they are conducted in exchange for positive behaviors shown towards them. Although these theories may provide explanations for links among psychological safety and its antecedents/outcomes, they do not provide a detailed and holistic understanding of the underlying processes through which psychological safety develops and influences workplace outcomes. Nor do they assist us in understanding the boundary conditions of the relationship between psychological safety and its antecedents/outcomes. Our review also highlighted a general reliance on quantitative research methodologies in the area of psychological safety and limited exploration of alternative methodologies. Finally, our review identified a lack of longitudinal research on the dynamic processes by which psychological safety develops and influences work outcomes. Among extant studies, only Schulte et al. (2012) employed a panel design where both antecedents and outcomes were measured at all points in time.

4. Agenda for future research

4.1. Opportunities for theoretical advancement

As highlighted in our review of prior research, the majority of studies of psychological safety have focused on its antecedents (e.g., supportive leadership behavior) and/or its outcomes. This research offers little theoretical understanding of the processes by which psychological safety influences positive and negative work outcomes or the boundary conditions that affect these relationships. In light of these limitations, we highlight two potential theoretical frameworks that researchers may draw on to examine these issues.

4.1.1. Conservation of resources theory

Our review highlights the need for a more holistic understanding of the underlying processes through which psychological safety develops and influences workplace outcomes. Therefore, we encourage researchers to integrate perspectives from the Conservation of Resources (COR) theory (Hobfoll, 1989). We believe that the COR theory provides a succinct explanation as to how

resources in the work environment, that have been identified in our review of the literature (e.g., supportive organizational practices and relationship networks), positively influence work outcomes. Moreover, COR theory provides an explanation for the development of psychological safety and how both individual and team resource investment and depletion may explain the psychological safety – work outcomes relationships.

The core tenet of COR theory is that individuals seek to gain resources to protect against resource loss (Hobfoll, 1989). Resources may include social support, rewards, autonomy, or job security and can either be gained or taken away by the organization, supervisor, team, or individuals. According to the 1st and 3rd corollaries of COR theory (Hobfoll, 2011), individuals with access to greater resources (e.g., relationship networks found within a psychologically safe work environment) are less vulnerable to resource loss (depletion) and are more capable of orchestrating resource gain (investment) through using their existing resources. By obtaining these additional resources, individuals are better equipped to meet their work demands and achieve their work goals (Halbesleben, Neveu, Paustian-Underdahl, & Westman, 2014). For example, when provided with adequate support in the workplace, employees will feel psychologically safe to share their ideas and knowledge with others in the workplace in the belief that this will assist them in obtaining further resources (e.g., positive feedback and suggestions from others in the workplace). This, in turn, will enable them to attain their work goals and is likely to foster an environment where individual and team learning occur and performance improves.

Based on this theory we present a conceptual framework in Fig. 2 to highlight the mechanisms by which psychological safety develops and influences work outcomes. As can be seen in Fig. 2, supportive job resources engender a climate of psychological safety, conferring protection from resource loss, which in turn is associated with negative individual outcomes such as stress and strain, as well as undesirable team outcomes such as conflict (the health impairment pathway). A climate of psychological safety also appears to distinguish high performing teams from their counterparts, as members in such teams are motivated to invest resources (e.g., through communication and knowledge sharing), which in turn leads to positive work outcomes such as learning, innovation, and performance at the individual- and team-level (the motivational pathway).

4.1.2. Trait activation theory

We also call on researchers to incorporate prominent person-situation theoretical perspectives, such as the trait activation theory (TAT) (Tett & Guterman, 2000), to further our understanding of the boundary conditions on the relationships among psychological safety and work outcomes. According to Tett and Guterman (2000, p. 398), “the behavioral expression of a trait requires arousal of the trait by trait-relevant situational cues”. TAT suggests that the influence of personality traits may depend on inducements offered by the context (situational cues), and therefore provides an explanation as to how organizational climates, such as psychological safety climate, might interact with the personality traits of the employee to predict their work behaviors and attitudes. Based on TAT we argue that a climate of psychological safety would amplify the positive effects of an individual's predisposition to act proactively, embodied in personality traits such as extraversion, proactive personality, and learning goal orientation. This would lead them to be more likely to engage in relevant work behaviors such as voice behavior or information sharing in environments, with high levels of psychological safety, as such an environment provides cues and opportunities for expression of their traits. Prior work has drawn on TAT to examine how organizational or team climates arouse individuals to engage in more positive behaviors at work when they possess certain personality traits (e.g., Byrne, Stoner, Thompson, & Hockwarter, 2005).

Together COR theory and TAT explain the processes by which psychological safety influences outcomes and the ways in which personality traits and psychological safety may interact to influence outcomes. We call upon researchers to draw on such perspectives in future studies in order to advance our understanding of psychological safety.

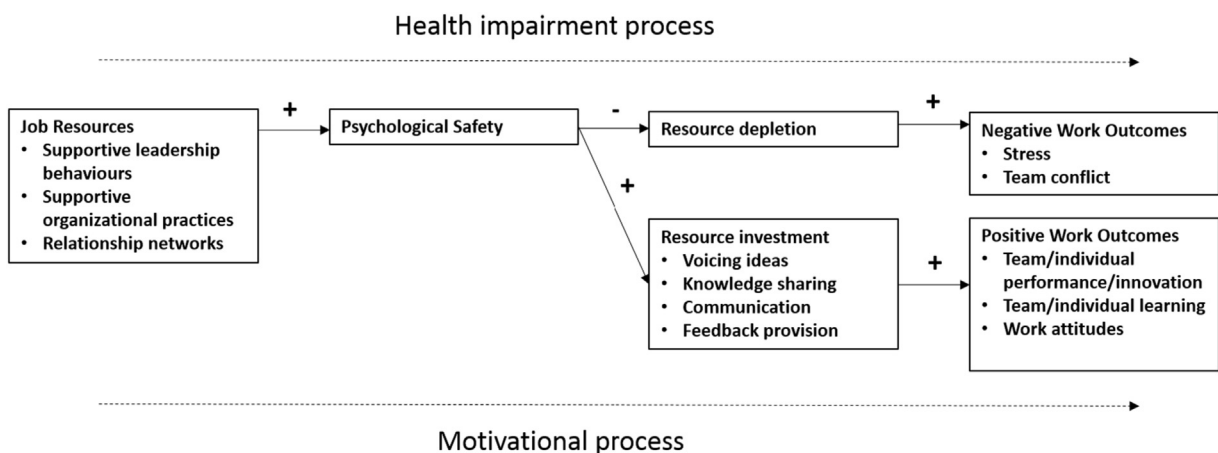


Fig. 2. An integrative theoretical framework of psychological safety.

4.2. Opportunities for empirical advancement

In the following sections, we develop an agenda for advancing empirical research. As well as (1) providing recommendations around the measurement of psychological safety; we call for (2) the greater use of alternative methodologies to study psychological safety; (3) additional research to investigate the influence of culture on employee and team responses to psychological safety; (4) greater investigation of the potential negative effects of psychological safety; and (5) more multi-level and cross-level work to understand the relative influence of individual, team and organizational-level antecedents on psychological safety. Research in these areas will have important practical implications through enabling managers to design work environments that are conducive to the development of psychological safety and maximize the benefits of psychological safety to the organization.

4.2.1. Measurement of psychological safety

While considerable empirical work on psychological safety has relied on the use of a cross-sectional quantitative survey methodology, limited longitudinal research has been conducted. Longitudinal studies, focusing on newcomer socialization in teams, involving multiple waves of data collection and the application of latent growth modeling (Duncan & Duncan, 2004) would afford the opportunity to systematically examine the dynamic nature of psychological safety, especially individuals' and teams' developmental trajectories in psychological safety, and inter-individual and team variability in its development. Research along these lines would be insightful as we know very little about the aetiology and temporal change of psychological safety in teams.

As well as using consensus models to measure psychological safety at the team and organizational-levels of analysis, researchers might consider measuring the degree of consensus between team members as to psychological safety within their dyadic relationships and map these using social network methods as network ties (Roussin et al., 2016). This will allow for a better understanding of how psychological safety dynamics within sub-teams influence learning and performance outcomes within teams, and address Roussin et al.'s (2016) concerns that the use of consensus models has led researchers to ignore team contexts in which members do not share similar beliefs about psychological safety.

In addition, we also call on researchers to investigate factors that influence *psychological safety strength* (i.e., the degree of consensus or agreement of individuals' perceptions of psychological safety within a team or organization; see Schneider, Salvaggio, and Subirats [2002]).² Although researchers have justified conceptualizing psychological safety as a team- or organization-level construct through measuring the degree of agreement between members, they have yet to examine the influence of psychological safety strength on team or organizational outcomes, or identify the factors that predict psychological safety strength. These are surprising omissions given the topic of team climate strength has gained increasing attention in the literature (González-Romá, Fortes-Ferreira, & Peiró, 2009; Schneider et al., 2002). We might expect variables such as team or organization size, geographic dispersion, and diversity among team and organizational members to influence the degree of psychological safety strength. Researchers might also examine whether psychological safety strength changes across the different stages of team development, and whether this construct moderates the relationships between team psychological safety and its outcomes.

4.2.2. Alternative methodologies to study psychological safety

Given the skew towards a quantitative survey methodology in extant research, researchers should also consider using alternative methodologies in future work to gain a more holistic understanding as to how psychological safety develops and influences work outcomes. In addition to using qualitative interviews, which have been adopted in prior research to gain a deeper understanding as to how psychological safety develops within teams and individuals, researchers might consider using observational techniques to gauge levels of psychological safety within a team or dyadic context. This may be done through looking at the verbal and non-verbal communication people use when interacting with one another. More specifically, face reading software might be used to determine the extent to which people seem comfortable when talking with one another and their willingness to engage in interpersonal risk taking.

4.2.3. Cultural influences on psychological safety

As recommended by Edmondson and Lei (2014), greater work might be undertaken to ascertain whether psychological safety has a stronger influence on outcomes for individuals, teams, and organizations operating in different cultural settings. At present most of the research investigating the influence of psychological safety in the workplace has been conducted in Western cultures, such as the US which are characterized by low levels of collectivism, power distance, and uncertainty avoidance (Hofstede, 2001). In such cultures individuals are more likely to be direct in voicing new ideas and engage in experimentation, without the presence of psychological safety. As a result, the influence of psychological safety on work outcomes such as learning, performance, and creativity might be expected to be more pronounced for individuals and teams embedded in organizations operating in cultures characterized by higher levels of collectivism, power distance, and uncertainty avoidance. In such cultures speaking out or experimenting with new ideas is less common, as engaging in such behavior leads to more social costs than in Western cultures and causes individuals to lose face and risk being ostracized by other group members (Friedman, Chi, & Liu, 2006; Liu, Zhu, & Yang, 2010). Examining psychological safety in these contexts will allow a more robust test of the predictive validity of psychological safety as the variance between members' perceptions of psychological safety may be higher than that of Western culture where there are minimal social costs to speaking out.

² Please note this definition of strength as used in the team climate literature does not refer to the mean level of psychological safety within a group but the strength of consensus or agreement between members of a group.

4.2.4. Negative effects of psychological safety

There has been an inordinate focus in prior empirical work on examining the positive outcomes of psychological safety. Recently, based on pervasive and counter-theoretical findings in some areas of management research, [Pierce and Aguinis \(2013\)](#) proposed a meta-theoretical principal they refer to as the *too-much-of-a-good-thing* effect (TMGT effect). Essentially, the TMGT effect occurs when levels of typically beneficial antecedents reach tipping points, after which their relations with desired outcomes shift from being linear and positive to curvilinear (inverted U-shape) and negative. Evidence of the TMGT effect has been found for assertiveness in terms of its relationship with leadership effectiveness ([Ames & Flynn, 2007](#)) and for conscientious with regard to its association with performance ([Whetzel, McDaniel, Yost, & Kim, 2010](#)). [Pierce and Aguinis \(2013\)](#) argued that other management constructs are likely to have non-monotonic relations with desired outcomes and therefore we consider here the possibility that too much psychological safety within a team could lead to detrimental outcomes.

In the extant psychological safety literature, only one prior study by [Pearsall and Ellis \(2011\)](#) has highlighted its potential negative influence, demonstrating that teams high in psychological safety are more likely to engage in unethical behavior. More specifically, [Pearsall and Ellis \(2011\)](#) argue that teams high in utilitarianism may utilize the psychological safety of their environment to choose the most beneficial option when making decisions, even if that option may be unethical. Once the unethical possibility is raised as a potential option, other team members may feel willing to support the idea, given a psychological safe climate within the team. These findings suggest that psychological safety might not always have a positive influence on team and organizational-level outcomes.

Hence, we also call on researchers to explore possible negative consequences of “too much” psychological safety at the individual, team, and organizational levels and potential curvilinear effects of psychological safety on outcomes at different levels of analysis. For example, psychological safety generally encourages change and disruption to the status quo, which can carry a certain degree of risk for individuals (e.g., “a damaged reputation if the initiative fails or disapproval if it is seen as inappropriate or threatening” [[Morrison & Phelps, 1999](#), p. 405]). In addition, recent work has shown that high levels of trust can lead to lower levels of team performance due to lower levels of monitoring within autonomous teams ([Langfred, 2004](#)). Thus, we expect psychological safety to have a negative influence on team learning and performance for teams that have high autonomy within their organization.

4.2.5. Interactive effects of individual, team and organizational-level antecedents on psychological safety

There has been limited investigation as to how individual-, team-, and organizational-level factors may interact to influence psychological safety, and subsequently influence outcomes, at different levels of analysis. Cross-level designs have only been previously used to examine how psychological safety at the team-level predicts individual-level outcomes ([Walumbwa & Schaubroeck, 2009](#)), and how psychological safety at the team level interacts with individual-level variables to predict team outcomes ([Liu et al., 2014](#)).

We call on researchers to conduct additional research to improve our understanding of how variables at different levels of analysis interact to predict psychological safety. Better understanding of how cultural, organizational, and team-level factors combine to predict the development of psychological safety will enable organizations to design effective work environments and practices that assist individuals and teams to work effectively. For example, scrutinizing cross-level effects of organizational-level variables, future research may investigate whether the influence of positive leadership behaviors (e.g., transformational or participative leadership; [Yukl, 2002](#)) on team-level psychological safety (team-level variables) is stronger or weaker when the organization has human resource (HR) practices in place that facilitate employee voice or involvement (e.g., [Holland, Pyman, Cooper, & Teicher, 2011](#)). On one hand, we might expect HR practices that enable “direct voice” (e.g., regular meetings with senior management or quality circles; [Holland et al., 2011](#)) to trigger positive leadership effects on team-level psychological safety by enabling employee engagement or involvement. In other words, transformational and participative leadership might only have a positive influence on psychological safety when the organizational environment is supportive of such leadership styles. On the other hand, it might also be argued that HR practices that facilitate employee voice or engagement will substitute for leader influence. In other words, in the absence of transformational or participative leadership, such HR practices may have a greater influence on psychological safety than where there is a transformational or participative leader.

Future research might also explore same-level direct effects of organizational-level antecedents on organizational-level psychological safety. Indeed, our review suggests that psychological safety and its antecedents are routinely scrutinized at the individual or team levels; yet, similar findings might also be expected at the organizational level. Thus, future research might focus on HR practices that engender direct voice arrangements ([Holland et al., 2011](#)), empowerment (e.g., structures and procedures that encourage initiative-taking; [Seibert, Silver, & Randolph, 2004](#)), employee discretion and group collaboration (“high involvement” HR practices; [Batt & Colvin, 2011](#)) as antecedents of psychological safety at the organizational level, given that such practices are likely to provide a shared structure of cooperation that facilitates the willing contribution of information among organizational members.

5. Conclusion

To conclude, we believe that psychological safety is important given it is a key cognitive state that allows learning processes to occur, and contributes to improved work outcomes at different levels of analysis ([Edmondson, 1999](#); [Edmondson et al., 2007](#)). From a practical perspective, this review has highlighted the myriad of positive workplace outcomes associated with psychological safety that indicate to managers the importance of engaging in supportive leadership behaviors, fostering bonds between team members, and leveraging supportive organizational practices to build psychological safety at work. Due to the importance of psychological safety for organizations today, research that helps us to understand the antecedents of psychological safety, and how and when psychological safety contributes to work outcomes, is important for individuals, teams, and organizations alike. Through offering suggestions to advance theoretical understanding of psychological safety and opportunities for advancing empirical research, we hope this review will stimulate future research.

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