

Rapid Evidence Assessment (REA)



IMPACT AND ANTECEDENTS* OF PSYCHOLOGICAL SAFETY IN WORKPLACES

a summary of scientific literature

January 2020



Culture Review Implementation
our journey of positive change



***For the purposes of this REA 'antecedents' refers to the 'drivers' that may cause psychological safety.**



This REA was produced by the Center for Evidence Based Management (CEBMA). The ACT Government acknowledges and thanks the CEBMa for allowing ACT Health to reproduce and redesign the content of their REA.

Any enquiries in relation to the content of this REA should be directed to CEBMa through their website: www.cebma.org

Acknowledgement of Country

ACT Health Directorate acknowledges the Traditional Custodians of the land, the Ngunnawal people. The Directorate respects their continuing culture and connections to the land and the unique contributions they make to the life of this area. It also acknowledges and welcomes Aboriginal and Torres Strait Islander peoples who are part of the community we serve.

Accessibility

The ACT Government is committed to making its information, services, events and venues as accessible as possible.

If you have difficulty reading a standard printed document and would like to receive this publication in an alternative format such as large print, please phone 13 22 81 or email HealthACT@act.gov.au



If English is not your first language and you require a translating and interpreting service, please phone Access Canberra on 13 22 81.

If you are deaf, or have a speech or hearing impairment and need the teletypewriter service, please phone 13 36 77 and ask for 13 22 81.

For speak and listen users, please phone 1300 555 727 and ask for 13 22 81. For more information on these services visit www.relayservice.com.au

© Australian Capital Territory, Canberra, July 2020.

This work is copyright. Apart from any use as permitted under the Copyright Act 1968, no part may be reproduced by any process without written permission from the Territory Records Office, ACT Government, GPO Box 158, Canberra City ACT 2601.

Enquiries about this publication should be directed to the ACT Health Directorate, Communications and Government Relations, GPO Box 825, Canberra City ACT 2601.

www.health.act.gov.au | www.act.gov.au

Enquiries: Canberra 13ACT1 or 13 22 81

Contents

Background	4
What is a Rapid Evidence Assessment (REA)?	5
Main question: What does this REA answer?	6
Search strategy: How was the research evidence sought?	6
Selection process: How were the studies selected?	7
Critical appraisal: How were the quality of the included studies judged?	7
Main findings	8
Conclusion	15
Limitations	15
References	16
Appendices	18



Background

The ACT public health system plays a critical role in the provision of healthcare to the people of the Australian Capital Territory (ACT) and surrounding New South Wales (NSW) region. Following the Independent Review into workplace culture within the ACT public health system which outlined recommendations to improve workplace experiences system-wide, the ACT Government through the ACT public health system engaged the Australian National University (ANU) Research School of Management to identify key priority areas for change. One of these key priority areas is psychological safety.

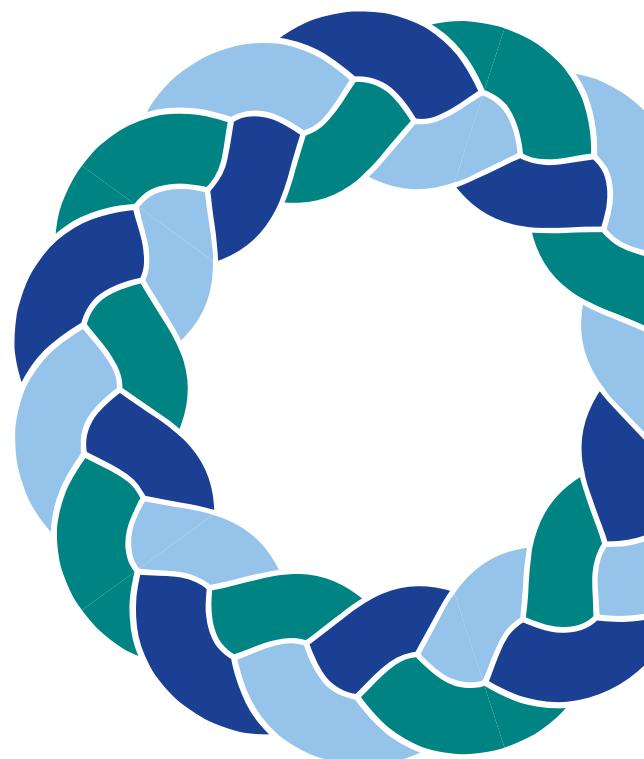
For this reason, the ACT public health system approached the Center for Evidence Based Management (CEBMa) to undertake a Rapid Evidence Assessment (REA) to understand what is known in the scientific literature about the impact and antecedents of psychological safety in teams and organisations. This review presents an overview of the findings.

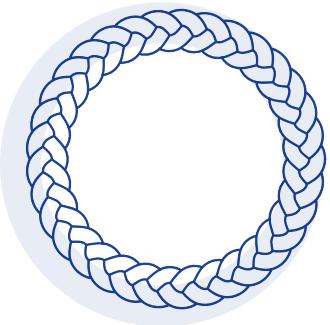


What is a Rapid Evidence Assessment (REA)?

Evidence reviews come in many forms. One of the best-known types is the conventional literature review, which provides an overview of the relevant scientific literature published on a topic. However, a conventional literature review's trustworthiness is often low: Clear criteria for inclusion is often lacking and studies are selected based on the researcher's personal preferences. As a result, conventional literature reviews are prone to severe bias.

This is why 'rapid evidence assessments' (REAs) are used. REAs use a specific research methodology to comprehensively identify the most relevant studies on a given topic, and select appropriate studies based on explicit criteria. In addition, two independent reviewers assess the methodological quality of the studies REAs include using explicit criteria. In contrast to a conventional literature review, REAs are transparent, verifiable, and reproducible, and, as a result, the likelihood of bias is considerably smaller.



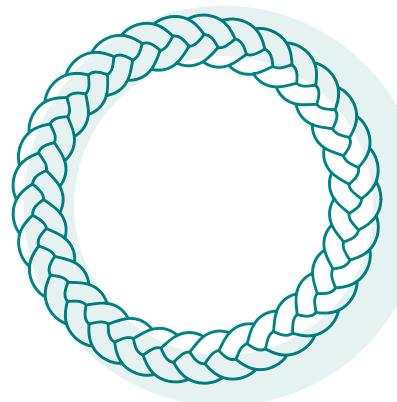


Main question: What does this REA answer?

What is known in the scientific literature about the impact and antecedents of psychological safety in teams and organisations?

Other issues raised, which will form the basis of our conclusion regarding the main question above, are:

1. **What is psychological safety?**
2. **How can psychological safety be measured?**
3. **What is the impact of psychological safety on organisational outcomes?**
4. **What are the antecedents of psychological safety?**

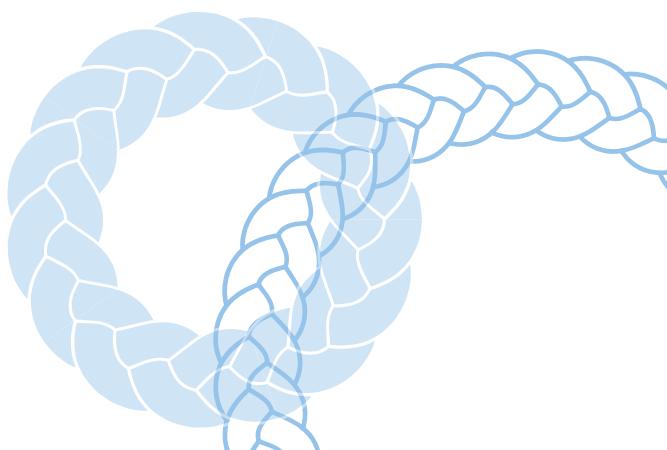


Search strategy: How was the research evidence sought?

Four databases were used to identify studies: ABI/INFORM Global, Business Source Premier, PsycINFO, and Medline. The search applied the following generic search filters:

1. **Scholarly journals, peer-reviewed.**
2. **Published in the period 2000 to 2019.**
3. **Articles in English.**

A search was conducted using combinations of various search terms, including 'psychological safety', 'antecedents', 'predict', 'characteristics', and 'factors'. We conducted five different search queries and screened the titles and abstracts of 300+ studies. An overview of all search terms and queries is provided in Appendix I.



Selection process: How were the studies selected?

Study selection took place in two phases. First, titles and abstracts of the 300+ studies identified were screened for relevance. In case of doubt or lack of information, the study was included. Duplicate publications were removed. This first phase yielded 173 studies. Second, studies were selected based on the full text of the article using these inclusion criteria:

1. **Type of studies:** Focusing on quantitative, empirical studies.
2. **Measurement:** Only studies in which relationships among team or organisational attributes, interventions and outcomes were quantitatively measured.
3. **Context:** Only studies related to workplace settings.
4. **Level of trustworthiness:** Only studies that were graded Level C or above (see below).

In addition, the following exclusion criteria were applied:

- Studies in non-western countries in which the perception of psychological safety and its effect on outcomes may differ from western countries due to cultural differences.
- Studies on psychological safety in specific groups, such as employees with a chronic illness.
- Studies on psychological safety in virtual, dispersed, or global teams.

This second phase yielded a total number of 66 studies. An overview of the selection process is provided in Appendix II.



Critical appraisal: How were the quality of the included studies judged?

The overall quality of the included studies was rather low. Of the 66 studies included, most (44) studies had a cross-sectional design and were therefore graded quality-Level D. Only six studies were classified as Level B or higher, including two meta-analyses. An overview of all studies included and their year of publication, research design, sample size, population, main findings, effect sizes and limitations is provided in Appendix III.

Main findings

1. What is psychological safety?

'Psychological safety' was introduced a half century ago by MIT professors Edgar Schein and Warren Bennis (1965). They argued that psychological safety is essential for making employees feel secure and being able of changing their behaviour in response to organisational change.

About 30 years later, Schein argued that psychological safety helps people overcome their defensiveness, and makes them focus on collective goals and problem prevention rather than on self-protection (Schein, 1993). In the past two decades, research on psychological safety has flourished, mainly due to the seminal work of Harvard professor Amy Edmondson. Edmondson argues that psychological safety 'helps to explain why employees share information and knowledge, speak up with suggestions for organisational improvements, and take initiative to develop new products and services' (Edmondson, 2014).

This review provides compelling evidence that psychological safety, indeed, does enable people to ask critical questions, seek help, report mistakes, raise concerns, and offer suggestions without the fear of negative consequences. For example, a recent study found that physicians who experienced more psychological safety were more likely to accept corrective and positive performance feedback from peers, explanations of feedback, and suggestions for improvement (Scheepers, 2018).

A construct related but distinct from psychological safety is trust, often defined as the willingness to be vulnerable to the actions of others (Mayer, 1995). However, Edmondson distinguishes the two constructs by emphasising their different focus. Specifically, trust captures a person's willingness to be vulnerable to others - thus reflecting his/her willingness to give the other person the benefit of the doubt. In contrast, psychological safety captures the extent to which a person believes that the other person will give him/her the benefit of the doubt when taking risks (Edmondson, 2004).

2. How can psychological safety be measured?

The level of psychological safety in a team or organisation can be measured with the seven items adapted from Edmondson's (1999) psychological safety scale.

3. What is the impact of psychological safety on organisational outcomes?

This review identified a large number of studies confirming that psychological safety is related to an array of (direct and indirect) organisational outcomes, thus making it a critical concept for managing teams and organisations. Table 1 provides an overview of these outcomes. Effect sizes indicate that psychological safety is strongly associated with co-workers' support, employee voice, information sharing, learning behaviour, team performance, pro-activity, psychological empowerment, retention/turnover, social network ties, team cohesion, and work engagement, with zero-order correlations larger than 0.5.

Studies included in this review also indicate that psychological safety moderates and/or mediates¹ several relationships between a wide range of constructs relevant to management and organisational outcomes. For example, even when a team has a learning orientation, team learning takes place only when psychological safety is high (Harvey, 2019). The same counts for empowering, authentic, transformational, inclusive and ethical leadership styles. Their positive effect on outcomes such as innovation, pro-active behaviour, constructive voice, organisational citizenship behaviour, and occupational safety only occurs when employees perceive their organisation and/or team as psychologically safe (Huyghebaert, 208; Ifzal, 2019; Kim, 2019; Liu, 2018; Malik, 2018; Rao, 2018).

Finally, a recent study indicates that psychological safety also mediates the relationship between functional dominance (i.e. when a team is dominated by a single function, for example medical specialists or engineers) and the performance of multi-disciplinary teams (Malhotra, 2017).

¹A moderator is a variable that affects the direction and/or strength of the relation between an independent or predictor variable and an outcome variable. A mediator is a variable that specifies how or why a particular effect or relationship occurs. Thus, if you remove the effect of the mediator, the relationship between the independent or predictor variable and the outcome variable will no longer exist. In short, moderators specify when a certain effect will hold, whereas mediators determine whether the effect will occur.

Table 1 - Psychological Safety - Zero Order Correlations

Outcome	Effect size	Level	Studies
Adaptability	.65	D	Cai, 2018
Commitment	.48	B	Frazier, 2017
Co-workers' support	.72 .25	D A	Da Silva, 2012; Guchait, 2016
Creative performance	.25 .35 .23 .13 .14 .19 ns ns	D A D B D D D D	Ahmad, 2019; Castro, 2018; Da Silva, 2012; Frazier, 2017; Gonzalves, 2017; Ji, 2017; Liu, 2016; Mura, 2016
Employee voice	.24 .50 .19 .60	C C D D	Chamberlin, 2017; Elsaied, 2019; Erkutlu, 2015; Rao, 2018
Fear	-.34	C	Chamberlin, 2017
Helping behaviour	.46	A	Guchait, 2015
Incident reporting (involved / observed)	.36 / .22	D	Lee, 2016
Information sharing	.52 .51	B D	Frazier, 2017; Chi-Cheng, 2018
Internal whistleblowing	.37 .36	D D	Anugerah, 2019; Malik, 2018
Learning behaviour	.51 .62 .61 .45	A B A D	Ashauer, 2013; Frazier, 2017; Guchait, 2014; Jha, 2019-2
Organisational deviance	-.33	D	Erkutlu, 2019
Organisational identification	.34	D	Erkutlu, 2015
Performance, task	.43	B	Frazier, 2017
Performance, team	.23 .50 .63 .71 .40	A D D C D	Applebaum, 2019; Ashauer, 2013; Chi-Cheng, 2018; Guchait, 2014; Jha, 2019-2
Pro-activity	.61	D	Cai, 2018
Problem solving capacity	.30	C	Carmeli, 2014
Psychological empowerment	.55	D	Jha, 2019-1
Psychological well-being	.33	D	Erkutlu, 2016
Psychological contract breach	-.27	D	Erkutlu, 2016
Reflexivity	.23	C	Carmeli, 2014
Resilience	.31	D	Cai, 2018
Satisfaction	.43	B	Frazier, 2017
Social network ties	.55	D	Chi-Cheng, 2018
Supportive work context	.49	B	Frazier, 2017
Surface acting (faking)	.33	C	Shumski, 2018
Team cohesion	.47 .68	D C	Applebaum, 2019; Guchait, 2014
Transactional memory system	.59 .40 .77	D C D	Chi-Cheng, 2018; Hood, 2016; Guchait, 2014
Turnover intentions	-.27 -.58 -.46 .40	D D D D	Ahmad, 2017; Da Silva, 2012; Jha, 2019-1; Yanchus, 2015
Trust in team members	.63	D	Aamir, 2013
Trust in top management	.28	D	Aamir, 2013
Work engagement	.39 .54 .45	D D B	Amir, 2013; Basit, 2017; Frazier, 2017

4.

What are the antecedents of psychological safety?

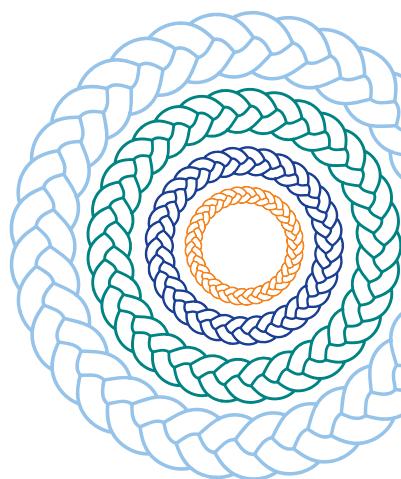
In addition to studies examining the consequences of workplace incivility, this review identified several studies of the antecedents or predictors. Table 1 provides an overview of these antecedents. The effect sizes indicate that the following factors are strong predictors of workplace incivility in teams and/or organisations:

Leadership style

The findings indicate that leaders perceived by their employees as authentic, benevolent, ethical, humble, supportive, and trustworthy positively affect the psychological safety within a team and/or the organisation (e.g. Anugerah, 2019). The same counts for leaders perceived as non-judgmental, empathic, and respectful listeners (Castro, 2018). Not surprisingly, leaders perceived as abusive, untrustworthy, or psychopathic negatively affect psychological safety.

Empowerment

Leaders who share power with their teams, give them the autonomy to make decisions by displaying trust in them and encouraging participative decision-making have a positive effect on psychological safety. Such empowering leaders create an environment of openness; this openness acts as a signal for employees to express themselves freely and speak up with suggestions for improvements (Rao, 2018).



Leader-assigned mastery goals

Goal setting is a well-researched topic in industrial and organisational psychology. A large number of high quality studies consistently demonstrate that specific, difficult goals yield higher performance than non-specific ('do-your best') goals; and specific difficult goals yield higher performance than specific easy goals (see CEBMa's REA on goal setting). However, when learning new tasks or working on ill-structured problems, employees will inevitably make errors, which may be embarrassing or threatening to their self-esteem.

In these situations, mastery or learning goals tend to be more effective. Mastery goals lead employees to view unsolved problems as challenges to be 'mastered' rather than focus on performance or how they will be judged (Ashauer, 2013). Thus, leaders who set mastery goals for their team members create an environment in which members feel safe in taking interpersonal risks and will not feel that speaking up about problems will be held against them.

Diversity climate

Diversity climate refers to employee perceptions regarding the organisation's diversity-related policies and practices. In a positive diversity climate, employees perceive that their organisation treats all members with respect and dignity and provides equal access to opportunities for career advancement, thereby creating a psychologically safe environment (Guchait, 2017).

Conflict management style

Managers and leaders who use a cooperative conflict management style display high levels of concern, respect for others and open communication. As such, this style for managing conflicts correlates with characteristics of supportive leadership, organisational justice and participative decision making, which are major antecedents of trust (Erkutlu, 2015). As explained above, when employees trust their leaders, they are more likely to openly express their thoughts and opinions.

Quality of the managerial relationship

When employees have suggestions, concerns, or knowledge they want to share with their managers, whether they do or don't decide to voice these is based on their past experiences with their manager. Employees who feel they are fairly and positively treated by their manager will speak up more comfortably, whereas those who perceive the relationship with their manager as negative or problematic are more likely to feel uncomfortable in doing so (Unler, 2019).

Team tenure

Team tenure is likely to have a curvilinear (U-shaped) influence on team interpersonal dynamics and (as a result) psychological safety (Koopman, 2019). Newly formed teams tend to experience more positive interpersonal dynamics than do long-tenured teams because the newly adopted group membership creates a “newgroup” identity that engenders positive perceptions about teammates and high trust. This trust originates because the new members do not have adequate information (yet) to judge the trustworthiness of their teammates. Members of moderately tenured teams, however, had more social interactions, and as a result may have discovered differences in personal values and opinions about how the team should approach task or interpersonal relationships. As a result, they are more likely to face conflicts and feelings of uncertainty, which are known to harm team psychological safety.

In contrast to moderately tenured teams, members of longer tenured teams have had extensive time to obtain a deeper understanding of each other. Moreover, when the team is managed effectively, it will have established team norms that enable its members to interact in a manner that focuses on effective goal completion, assisting other team members in their tasks, and avoiding unproductive conflict, which leads to higher team psychological safety (Koopman, 2019).

It should be noted, however, that many factors listed in Table 1 are based on cross-sectional research, which makes the nature or direction of the effect uncertain. This means that some of these factors, such as helping behaviour, a supportive work context, reflexivity, and team cohesion may be an antecedent rather than a result of psychological safety.

Table 2 - Antecedents of Psychological Safety

Antecedent	Effect size	Level	Studies
Abusive supervision	r = -.35	C	Liu, 2016
Authentic leadership	r = .36; .46	D D	Anugerah, 2019; Liu, 2018
Benevolent leadership	r = .31	D	Erkutlu, 2016
Cooperative conflict management style	r = .23 / .31	D	Erkutlu, 2015
Diversity climate	r = .52	D	Guchait, 2017
Empowering leadership	r = .63	D	Rao, 2018
Ethical leadership	r = .30	D	Malik, 2018
Individuation	d = 1.22	A	Kim, 2019
Supervisor's listening	$\beta = .38$	AA	Castro, 2018
Transformational leadership	r = .22	C	Carmeli, 2014
Leader's age	r = .23	D	Gonzalves, 2017
Leader-assigned mastery goals	d = .78	A	Ashauer, 2013
Leader humility	r = .39; .64	D D	Gonzalves, 2017; Walters, 2016
Leader psychopathy	r = -.37	D	Erkutlu, 2019
Managerial relationship	$\beta = .65$	D	Unler, 2019
Moral disengagement	r = -.28	D	Erkutlu, 2019
Organisational politics	$\beta = -.20$	D	Lee, 2016
Power distance	r = -.36	D	Applebaum, 2019
Servant leadership	r = .37	D	Schaubroeck, 2011
Supportive leadership	r = .32	C	Elsaied, 2019
Team affect (pos/neg)	r = .34 / -.37	C	Hood, 2016
Team tenure	U-shaped	D	Koopman, 2019
Trust in supervisor	r = .69	D	Basit, 2017

Conclusion

The studies identified through this review clearly demonstrate that psychological safety has a large, positive relationship with a wide range of organisational outcomes, and as such is likely to be an important condition for the effectiveness of teams, workgroups, and the organisation as a whole. Review findings also indicate that the leadership style and skills of managers and team leaders directly enhance, or undermine, the establishment of psychological safety.

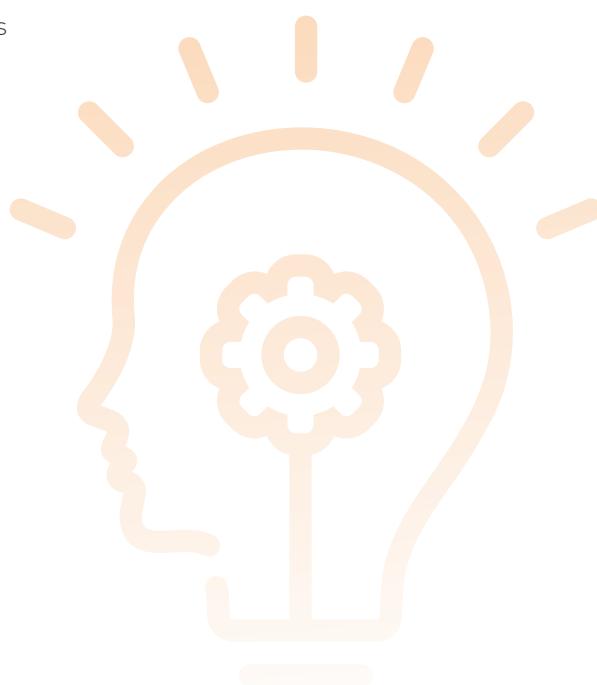
Limitations

This REA aims to provide a balanced assessment of what is known in the scientific literature about the impact and attributes of psychological safety on teams and organisations by using the systematic review method to search and critically appraise empirical studies. However, in order to be 'rapid', concessions were made in relation to the breadth and depth of the search process, such as the exclusion of unpublished studies, the use of a limited number of databases and a focus on empirical research published in the period 2000 to 2019. As a consequence, relevant studies may have been missed.

A second limitation concerns the critical appraisal of the studies included, which did not incorporate a comprehensive review of the psychometric properties of their tests, scales and questionnaires.

Finally, the findings of this review are sometimes based on low-quality studies, i.e. studies without a control group and/or pre-test. As a result, a causal relationship between the impact and antecedents of psychological safety can't be confirmed, which means that alternative explanations for the effects found are possible.

Given these limitations, care must be taken not to present the findings presented in this REA as conclusive.



References

- Aamir Ali, C., & Buckley, F. (2013). Exploring the impact of trust on research scientists' work engagement. *Personnel Review*, 42(4), 396-421.
- Ahmad, I., & Mujtaba, A. (2017). The dark side of Corporate Social Responsibility: Evidence from a Public Sector Oil Company. *NUML International Journal of Business & Management*, 12(1), 15-27.
- Ahmad, I., Dania, M. B. L., & Shahzad, K. (2019). Impact of Corporate Social Responsibility Attributions on Employees' Creative Performance: The Mediating Role of Psychological Safety. *Ethics & Behavior*, 29(6), 490-509.
- Anugerah, R., Abdillah, M. R., & Anita, R. (2019). Authentic leadership and internal whistleblowing intention: The mediating role of psychological safety. *Journal of Financial Crime*, 26(2), 556-567.
- Appelbaum, N. P., Lockeman, K. S., Orr, S., Huff, T. A., Hogan, C. J., Queen, B. A., & Dow, A. W. (2019). Perceived influence of power distance, psychological safety, and team cohesion on team effectiveness. *Journal of Interprofessional Care*, 1-7.
- Ashauer, S. A., & Macan, T. (2013). How Can Leaders Foster Team Learning? Effects of Leader-Assigned Mastery and Performance Goals and Psychological Safety. *The Journal of Psychology*, 147(6), 541.
- Basit, A. A. (2017). Trust in Supervisor and Job Engagement: Mediating Effects of Psychological Safety and Felt Obligation. *The Journal of Psychology*, 157(8), 701-721.
- Cai, Z., Huang, Q., Liu, H., & Wang, X. (2018). Improving the agility of employees through enterprise social media: The mediating role of psychological conditions. *International Journal of Information Management*, 38(1), 52-63.
- Carmeli, A., Sheaffer, Z., Binyamin, G., Reiter-Palmon, R., & Shimoni, T. (2014). Transformational leadership and creative problem-solving: The mediating role of psychological safety and reflexivity. *The Journal of Creative Behavior*, 48(2), 115-135.
- Castro, D. R., Anseel, F., Kluger, A. N., Lloyd, K. J., & Turjeman-Levi, Y. (2018). Mere listening effect on creativity and the mediating role of psychological safety. *Psychology of Aesthetics, Creativity, and the Arts*, 12(4), 489-502.
- Chamberlin, M., Newton, D. W., & Lepine, J. A. (2017). A Meta-Analysis of Voice and Its Promotive and Prohibitive Forms: Identification of Key Associations, Distinctions, and Future Research Directions. *Personnel Psychology*, 70(1), 11-71.
- Chi-Cheng, H., & Ping-Kuo, C. (2018). Exploring the antecedents and consequences of the transactive memory system: an empirical analysis. *Journal of Knowledge Management*, 22(1), 92-118.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Da Silva, N., & Oldham, G. R. (2012). Adopting employees' ideas: Moderators of the idea generation–idea implementation link. *Creativity Research Journal*, 24(2-3), 134-145.
- Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, 44(2), 350-383.
- Edmondson, A. C., & Lei, Z. (2014). Psychological safety: The history, renaissance, and future of an interpersonal construct. *Annual Review of Organizational Psychology and Organizational Behavior*, 1, 23-43.
- Elsaied, M. M. (2019). Supportive leadership, proactive personality and employee voice behaviour: The mediating role of psychological safety. *American Journal of Business (Emerald Group Publishing Limited)*, 34(1), 2-18.
- Erkutlu, H., & Chafra, J. (2015). The mediating roles of psychological safety and employee voice on the relationship between conflict management styles and organisational identification. *American Journal of Business*, 30(1), 72-91.
- Erkutlu, H., & Chafra, J. (2016). Benevolent leadership and psychological well-being: The moderating effects of psychological safety and psychological contract breach. *Leadership & Organization Development Journal*, 37(3), 369-386.
- Erkutlu, H., & Chafra, J. (2019). Leader psychopathy and organizational deviance. *International Journal of Workplace Health Management*, 12(4), 197-213.
- Frazier, M. L., Fainshmidt, S., Klinger, R. L., Pezeshkan, A., & Vracheva, V. (2017). Psychological Safety: A Meta-Analytic Review and Extension. *Personnel Psychology*, 70(1), 113-165.
- Gonçalves, L., & Brandão, F. (2017). The relation between leader's humility and team creativity: The mediating effect of psychological safety and psychological capital. *International Journal of Organizational Analysis*, 25(4), 687-702.
- Guchait, P., Tews, M. J., & Simons, T. (2014). The Influence of Transactional Memory Systems and Psychological Safety on Effectiveness of Service Management Teams in a Restaurant Setting. *Journal of Human Resources in Hospitality & Tourism*, 13(3), 234.
- Guchait, P., Madera, J., & Dawson, M. (2016). Learning in the service environment: the influence of diversity climate. *Journal of Service Theory and Practice*, 26(4), 448-470.

- Guchait, P., Lee, C., Wang, C.-Y., & Abbott, J. L. (2016). Impact of error management practices on service recovery performance and helping behaviours in the hospitality industry: The mediating effects of psychological safety and learning behaviours. *Journal of Human Resources in Hospitality & Tourism*, 15(1), 1.
- Harvey, J.-F., Johnson, K. J., Roloff, K. S., & Edmondson, A. C. (2019). From orientation to behaviour: The interplay between learning orientation, open-mindedness, and psychological safety in team learning. *Human Relations*, 72(11), 1726-1751.
- Hood, A. C., Bachrach, D. G., Zivnuska, S., & Bendoly, E. (2016). Mediating effects of psychological safety in the relationship between team affectivity and transactive memory systems. *Journal of Organizational Behavior*, 37(3), 416-435.
- Huyghebaert, T., Gillet, N., Fadi-Joseph, L., Dubois-Fleury, A., & Fouquereau, E. (2018). Psychological Safety Climate as a Human Resource Development Target: Effects on Workers Functioning Through Need Satisfaction and Thwarting. *Advances in Developing Human Resources*, 20(2), 169-181.
- Ifzal, A., & Waheed Ali, U. (2019). The impact of ethical leadership style on job satisfaction. *Leadership & Organization Development Journal*, 40(5), 534-547.
- Jha, S. (2019). Team psychological safety and team performance. *International Journal of Organizational Analysis*, 27(4), 903-924.
- Kim, B.-J., Park, S., & Kim, T.-H. (2019). The effect of transformational leadership on team creativity: sequential mediating effect of employee's psychological safety and creativity. *Asian Journal of Technology Innovation*, 27(1), 90-107.
- Kim, N. Y. (2019). Linking individuation and organisational identification: Mediation through psychological safety. *The Journal of Social Psychology*.
- Koopmann, J., Lanaj, K., Wang, M., Zhou, L., & Shi, J. (2016). Nonlinear effects of team tenure on team psychological safety climate and climate strength: Implications for average team member performance. *Journal of Applied Psychology*, 101(7).
- Lee, Y.-H., Yang, C.-C., & Chen, T.-T. (2016). Barriers to incident-reporting behavior among nursing staff: A study based on the theory of planned behavior. *Journal of Management and Organization*, 22(1), 1-18.
- Liu, W., Zhang, P., Liao, J., Hao, P., & Mao, J. (2016). Abusive supervision and employee creativity: The mediating role of psychological safety and organizational identification. *Management Decision*, 54(1), 130-147.
- Liu, Y., Fuller, B., Hester, K., Bennett, R. J., & Dickerson, M. S. (2018). Linking authentic leadership to subordinate behaviors. *Leadership & Organization Development Journal*, 39(2), 218-233.
- Malhotra, M. K., Ahire, S., & Shang, C. (2017). Mitigating the Impact of Functional Dominance in Cross-Functional Process Improvement Teams. *Decision Sciences*, 48(1), 39.
- Mura, M., Lettieri, E., Radaelli, G., & Spiller, N. (2016). Behavioral operations in healthcare: a knowledge sharing perspective. *International Journal of Operations & Production Management*, 36(10), 1222-1246.
- Malik, M. S., & Nawaz, M. K. (2018). The Role of Ethical Leadership in Whistleblowing Intention among Bank Employees: Mediating Role of Psychological Safety. *Review of Integrative Business and Economics Research*, 7, 238-252.
- Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integrative model of organizational trust. *Academy of Management Review*, 20(3), 709-734.
- Petticrew, M., & Roberts, H. (2006). How to appraise the studies: an introduction to assessing study quality. *Systematic reviews in the social sciences: A practical guide*, 125-163.
- Rao, J. U., & Mukhopadhyay, S. (2018). Empowering leadership and constructive voice behavior: a moderated mediated model. *International Journal of Organizational Analysis*, 26(2), 226-241.
- Schaubroeck, J., Lam, S. S. K., & Peng, A. C. (2011). Cognition-based and affect-based trust as mediators of leader behavior influences on team performance. *Journal of Applied Psychology*, 96(4), 863.
- Scheepers, R. A., van den Goor, M., Arah, O. A., Heineman, M. J., & Lombarts, K. M. J. M. H. (2018). Physicians' Perceptions of Psychological Safety and Peer Performance Feedback. *The Journal of Continuing Education in the Health Professions*, 38(4), 250-254.
- Schein, E.H., Bennis, W. (1965). *Personal and Organizational Change Through Group Methods*. New York: Wiley.
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Houghton, Mifflin and Company.
- Shaughnessy, J. J., & Zechmeister, E. B. (1985). *Research methods in psychology*. Alfred A. Knopf.
- Shumski, J., Thomas, J., Olien, J. L., Allen, J. A., Rogelberg, S. G., & Kello, J. E. (2018). Faking It for the Higher-Ups: Status and Surface Acting in Workplace Meetings. *Group & Organization Management*, 43(1), 72-100.
- Unler, E., & Caliskan, S. (2019). Individual and managerial predictors of the different forms of employee voice. *The Journal of Management Development*, 38(7), 582-603.
- Walters, K. N., & Diab, D. L. (2016). Humble Leadership: Implications for Psychological Safety and Follower Engagement. *Journal of Leadership Studies*, 10(2), 7-18.
- Yanchus, N. J., Periard, D., Moore, S. C., Carle, A. C., & Osatuke, K. (2015). Predictors of Job Satisfaction and Turnover Intention in VHA Mental Health Employees: A Comparison Between Psychiatrists, Psychologists, Social Workers, and Mental Health Nurses. *Human Services Organizations. Management, Leadership & Governance*, 39(3), 219.

Appendix I

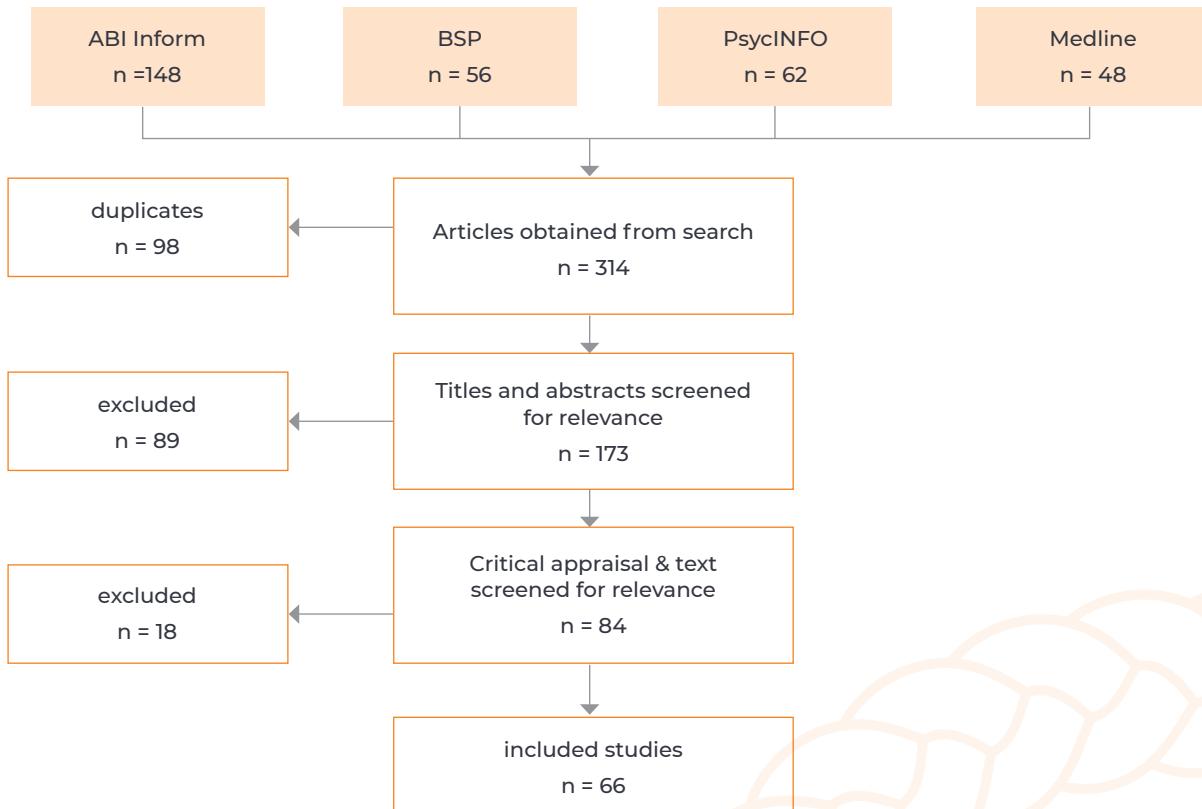
Search terms & hits

**ABI/Inform Global, Business Source Elite, PsycINFO
peer reviewed, scholarly journals, Nov 2019**

Search terms	ABI	BSP	PSY	Medline
S1: ti('psychological safety') or ab('psychological safety')	296	269	342	48
S2: filter MAs and/or SRs	9	6	10	-
S3: ti(predict*) OR ti(antecedent*) OR ti(characteristic*) OR ti(factor*) OR ti(moderat*) OR ti(mediat*) OR ab(antecedent*) OR ab(moderat*) OR ab(mediat*)	137,138	97,589	219,438	-
S4: S1 AND S3	142	51	45	-
S5: S2 OR S4	148	56	62	48

Appendix II

Selection of studies



Appendix |||

Data extraction table – Psychological Safety

Author & year	Design & sample size	Sector / Population	Main findings	Effect sizes	Limitations	Level
Aamir, 2013	cross-sectional survey n = 170	Research scientists in Ireland	<p>Predictors:</p> <ol style="list-style-type: none"> 1. Trust in top management is positively associated with psychological safety. 2. Trust in team members is positively associated with psychological safety. Outcomes: 3. Team psychological safety is positively associated with work engagement. 	$r = .28$ $r = .63$ $r = .39$	no serious limitations	D
Agarwal, 2017	cross-sectional survey (outcome reported by supervisors) n = 505 employees & 221 supervisors	Employees of a large pharmaceutical firm	<p>Predictors:</p> <ol style="list-style-type: none"> 1. Psychological capital (the positive and developmental state of an individual as characterised by high self-efficacy, optimism, hope and resilience) is positively associated with psychological safety. 2. High-performance work systems (an integrated system of HR practices that are internally consistent - alignment among HR practices - and externally consistent - alignment with organisational strategy) are positively associated with psychological safety. Outcomes: 3. Psychological safety is positively associated with creativity implementation. 	$r = .61$ $r = .72$ $r = .56$	no serious limitations	D

<p>cross-sectional survey (outcome reported by supervisors)</p> <p>Ahmad, 2019</p> <p>n = 339 dyads (employee & supervisor)</p>	<p>Employees in the telecom industry in Pakistan</p> <p>Outcomes:</p> <ol style="list-style-type: none"> 1. Employees' intrinsic corporate social responsibility (CSR) attributions are positively associated with psychological safety. 2. Employees' extrinsic CSR attributions are negatively related to psychological safety. 3. Psychological safety is positively associated with creative performance. 	<p>Predictors:</p> <ol style="list-style-type: none"> 1. Employees' intrinsic corporate social responsibility (CSR) attributions are positively associated with psychological safety. 2. Employees' extrinsic CSR attributions are negatively related to psychological safety. 3. Psychological safety is positively associated with creative performance. 	<p>Employees in the telecom industry in Pakistan</p> <p>Outcomes:</p> <ol style="list-style-type: none"> 1. Employees' intrinsic corporate social responsibility (CSR) attributions are positively associated with psychological safety. 2. Employees' extrinsic CSR attributions are negatively related to psychological safety. 3. Psychological safety is positively associated with creative performance. 	<p>no serious limitations</p> <p>D</p>
<p>cross-sectional survey (Ahmad, 2017)</p> <p>n = 276 employees</p>	<p>Employees in a public oil & gas company in Pakistan</p> <p>Outcomes:</p> <ol style="list-style-type: none"> 1. Employees' intrinsic corporate social responsibility (CSR) attributions are positively associated with psychological safety. 2. Employees' extrinsic CSR attributions are negatively related to psychological safety. 3. Psychological safety is negatively associated with turnover intentions. 	<p>Predictors:</p> <ol style="list-style-type: none"> 1. Employees' intrinsic corporate social responsibility (CSR) attributions are positively associated with psychological safety. 2. Employees' extrinsic CSR attributions are negatively related to psychological safety. 3. Psychological safety is negatively associated with turnover intentions. 	<p>no serious limitations</p> <p>D</p>	<p>no serious limitations</p> <p>D</p>
<p>Anugerah, 2019</p> <p>n = 201 employees</p>	<p>Employees in public sector in Indonesia</p> <p>Outcomes:</p> <ol style="list-style-type: none"> 1. Authentic leadership is positively associated with psychological safety. 2. Psychological safety is positively associated with internal whistleblowing. 	<p>Predictors:</p> <ol style="list-style-type: none"> 1. Authentic leadership is positively associated with psychological safety. 2. Psychological safety is positively associated with internal whistleblowing. 	<p>no serious limitations</p> <p>D</p>	<p>no serious limitations</p> <p>D</p>
<p>Applebaum, 2019</p> <p>n = 243</p>	<p>Students in a nursing program and doctor of medicine program in the USA</p> <p>Outcomes:</p> <ol style="list-style-type: none"> 1. Perceived power distance is negatively associated with psychological safety. 2. Psychological safety is positively associated with perceived team cohesion. 3. Psychological safety is positively associated with perceived team effectiveness. 	<p>Predictors:</p> <ol style="list-style-type: none"> 1. Perceived power distance is negatively associated with psychological safety. 2. Psychological safety is positively associated with perceived team cohesion. 3. Psychological safety is positively associated with perceived team effectiveness. 	<p>r = -.36</p> <p>r = .37</p>	<p>r = -.36</p> <p>r = .47</p> <p>r = .50</p>

Ashauer, 2013	randomised controlled study without a premeasure n = 213 students in 71 teams of three	<p>Predictors:</p> <ol style="list-style-type: none"> Leader-assigned mastery goals are associated with higher team psychological safety than leader-assigned performance goals or no goals. <p>Outcomes:</p> <ol style="list-style-type: none"> Team psychological safety is positively associated with team learning behaviour. Team psychological safety is positively associated with team performance quality. Team psychological safety is positively associated with team performance quantity. Team psychological safety is positively associated with team performance quantity. <p>Note: Leader-assigned mastery goals alleviate concerns about threat to image, because they focus attention on rectifying a problematic situation (Dweck, 1986; Dweck & Leggett, 1988) as opposed to proving competence.</p>	<p>A</p> <p>perf goal / no goal: d = .78 / d = .59 no serious limitations</p> <p>r = .51</p> <p>r = .23</p> <p>r = .12 (ns)</p>
Basit, 2017	cross-sectional survey n = 337	<p>Predictors:</p> <ol style="list-style-type: none"> Trust in supervisor is positively associated with psychological safety. <p>Outcomes:</p> <ol style="list-style-type: none"> Psychological safety is positively associated with job engagement (physical, emotional and cognitive engagement). Felt obligation partially mediates the relationship between psychological safety and job engagement. 	<p>D</p> <p>overall engagement: r=.54, structural path estimate for direct relationship= .29; physical eng.: r=.38; emotional eng.: r=.50; cognitive eng.: r=.52</p>
Byrne, 2017	cross-sectional survey n = 709	<p>Predictors</p> <ol style="list-style-type: none"> Attachment anxiety is negatively associated with psychological safety. Attachment avoidance is negatively associated with psychological safety. <p>Outcomes</p> <ol style="list-style-type: none"> Psychological safety is positively associated with employee engagement. 	<p>D-</p> <p>Uses Mt-Turk participants without clearly checking if they are employed</p> <p>r = -.24</p> <p>r = -.36</p> <p>r = .57</p>

		Predictors:	
Cai, 2018	cross-sectional survey n = 1677	1. Enterprise social media (digital platform for internal communication and social interaction within an enterprise) usage is positively associated with psychological safety. Outcomes: 2. Psychological safety is positively associated with proactivity. 3. Psychological safety is positively associated with adaptability. 4. Psychological safety is positively associated with resilience.	r = .19 r = .61 r = .65 r = .31
Castro, 2018	meta-analysis of 5 studies, including 2 exp studies total n = 744	H1. Supervisor's listening is positively associated with subordinate's psychological safety. H2. Psychological safety is positively related to creativity. H3. The effect of supervisor's listening on employee's creativity is mediated by employee's psychological safety.	β = .38 95% CI [27,.50]. d = 0.51 moderate r's
Carmeli, 2014	time-lag study (3 waves, 2-week lag) n = 302	Predictors: 1. Transformational leadership predicts psychological safety. Outcomes: 2. Psychological safety predicts reflexivity. 3. Psychological safety predicts creative problem-solving capacity. 4. Reflexivity partially mediates the relationship between psychological safety and creative problem-solving capacity.	r = .22 r = .23 r = .30
Chamberlin, 2017	meta-analysis of correlational studies k = 189 n = 71,820	» Psychological safety is positively related to voice. » Psychological safety is negatively associated with fear.	p = .24 95% CI [.20,.28]) p = -.34 no serious limitations

		Predictors:	
Chi-Cheng, 2018 n = 366	R&D employees in organisations in Taiwan	<p>1. Knowledge integration is positively associated with psychological safety. r=.50</p> <p>2. Knowledge sharing is positively associated with psychological safety. r=.51</p> <p>3. Social network ties are positively associated with psychological safety. r=.55</p> <p>4. Transactive Memory Systems are positively related with psychological safety. r=.59</p> <p>Outcomes:</p> <p>5. Team psychological safety is positively associated with team performance. r=.63</p>	No notable limitations D
Clark, 2014 n = 94 dyads (nurse + coworker)	cross-sectional survey Nurses at hospitals in Midwestern USA	<p>Outcomes:</p> <p>1. Psychological safety climate (the employee's perception of safety behaviours and practices that are both formally and informally enforced and rewarded by the organisations) is positively associated with organisational citizenship behaviour.</p> <p>2. Role definition (narrow – no OCB included vs. broad – OCB included) moderates the relationship between psychological safety and OCB, so that the association is stronger for people with a narrow role definition.</p>	<p>r=.34, $\beta=.22$ $\beta=-.03$ for broad role definition vs. $\beta=.52$ for narrow-role definition</p> <p>D no serious limitations</p>
Cuellar, 2018 n = 2005	cross-sectional survey Clinicians and primary care practices in Virginia, USA	<p>Predictors:</p> <p>1. Practice ownership (independent, hospital-owned, federally-qualified health center) is associated with psychological safety: highest levels are in hospital-owned practices, followed by independent practices and then by federally-qualified health centers.</p>	<p>$\beta=.36$ for hospital- owned, $\beta=-.26$ for federally- qualified health center (Independent practice is the reference)</p> <p>D- Psychological safety is measured with just one item</p>
Da Silva, 2012 n = 93	cross-sectional study Library employees	<p>Outcomes:</p> <p>1. Psychological safety is positively associated with average radicalness of ideas generated. r = .23</p> <p>2. Psychological safety is negatively related to the number of ideas implemented. r = -.11</p> <p>3. Psychological safety is positively associated with employees' intention to stay. r = .58</p> <p>4. Psychological safety is positively correlated with coworkers' support. r = .72</p>	<p>D no serious limitations</p>

<p>time-lag study (1-2 weeks lag) – outcome was assessed by supervisors</p> <p>Elsayed, 2019</p> <p>n = 268 employees and 56 supervisors</p>	<p>Predictors:</p> <ol style="list-style-type: none"> 1. Supportive leadership is positively related to psychological safety. 2. Proactive personality is positively related to psychological safety. <p>Outcomes:</p> <ol style="list-style-type: none"> 3. psychological safety is positively associated with employee voice behaviour. 	<p>r = .32</p> <p>r = .42</p> <p>C no serious limitations</p>
<p>cross-sectional survey</p> <p>Erkutlu, 2015</p> <p>n = 1,023</p>	<p>Predictors:</p> <ol style="list-style-type: none"> 1. Cooperative conflict management styles (obliging, compromising, and integrating) are positively associated with psychological safety. <p>Outcomes:</p> <ol style="list-style-type: none"> 2. Psychological safety is positively associated with employees' organisational identification. 3. Psychological safety is positively associated with employees' voice behaviour. 	<p>r = .23; compromising: r=.26; integrating: r=.31 D no serious limitations</p>
<p>cross-sectional survey</p> <p>Erkutlu, 2016</p> <p>n = 1,009</p>	<p>Predictors:</p> <ol style="list-style-type: none"> 1. Benevolent leadership is positively associated with psychological safety. <p>Outcomes:</p> <ol style="list-style-type: none"> 2. Psychological safety is positively associated with psychological well-being. 3. Psychological safety is negatively associated with psychological contract breach. 	<p>Unclear if outcome measure was self-report or who was the focal leader.</p>
<p>cross-sectional survey</p> <p>Erkutlu, 2019</p> <p>n = 611</p>	<p>Predictors:</p> <ol style="list-style-type: none"> 1. Leader psychopathy is negatively related to psychological safety. 2. Moral disengagement is negatively associated with psychological safety. <p>Outcomes:</p> <ol style="list-style-type: none"> 3. Psychological safety is negatively related to organisational deviance. 	<p>r = -.37 D no serious limitations</p>

Frazier, 2017	meta-analysis, includes longitudinal studies k = 136	H1. Psychological safety is positively related to (a) proactive personality, (b) emotional stability, (c) openness to experience, and (d) learning orientation. H2. Psychological safety is positively related to positive leader relations. H3. Psychological safety is positively related to the work design characteristics of (a) autonomy, (b) interdependence, and (c) role clarity. H4. Psychological safety is positively related to supportive work context. H5. Psychological safety is positively related to work engagement. H6. Psychological safety is positively related to task performance. H7. Psychological safety is positively related to (a) information sharing, (b) citizenship behaviours, (c) creativity, and (d) learning behaviour. H8. Psychological safety is positively related to (a) commitment and (b) satisfaction. R1. Psychological safety explains variance in task performance and citizenship behaviours over and beyond other variables.	B H1a: $\rho = .35$ H1b: $\rho = .17$ H1c: ns H1d: $\rho = .24$ H2: $\rho = .44$ H3a: $\rho = .47$ H3b: $\rho = .86$ H3c: $\rho = .63$ H4: $\rho = .49$ H5: $\rho = .45$ H6: $\rho = .43$ H7a: $\rho = .52$ H7b: $\rho = .32$ H7c: $\rho = .13$ H7d: $\rho = .62$ H8a: $\rho = .48$ H8b: $\rho = .43$ R1: see table 3, last 3 columns
Friedman, 2018	time lag study (1 month lag); n = 251	Employees in SMEs in Israel	Outcomes 1. Psychological safety does not predict job performance. r = 0.04 no serious limitations
Gilmartin, 2018	cross-sectional study n = 294 units	Health care employees in the USA	Outcome 1. Psychological safety is negatively related to reporting of non-adherence to a safety checklist during central line insertion procedure. not reported Psychological safety is measured by only 1 item

Gonzalves, 2017	cross-sectional study n = 341 respondents in 73 teams	Predictors: 1. Leader's humility predicts team's psychological safety. 2. Leader's age is positively related with team psychological safety. Outcomes: 3. Team's psychological safety predicts team's psychological capital. 4. Psychological safety is positively associated with team creativity.	self-described humility: r=.01; others- described humility: r=.39 no serious limitations D
Greene, 2019	cross-sectional study n = 528 hospitals (data at hospital-level, 1 respondent per hospital)	Predictors: 1. Psychological safety is positively associated with using recommended health care-associated infection (HAI) prevention practices.	Odds ratio between .48 and 2.37 for different infection prevention practices no serious limitations D
Guchait, 2014	time-lag study (2 weeks lag) n = 178 (27 teams)	Predictors: 1. Transactional memory systems are positively associated with psychological safety. Outcomes: 2. Psychological safety is associated with team performance. 3. Psychological safety is associated with team cohesion.	Finding no. 1 is based on cross- sectional data C
Guchait, 2016	randomised controlled trial (no before- measure) n = 284	Predictors: 1. Organisational, supervisor and coworker support are positively associated with psychological safety. Outcomes: 2. Psychological safety is positively associated with learning behaviours. 3. Psychological safety is positively associated with service recovery performance. 4. Psychological safety is positively associated with helping behaviours.	org. support: r=.34, supervisor support: r=.26; coworker support: r=.25 A Participants were asked to read a scenario and rate the variables based on the scenario (low external validity) r=.61 r=.58 r=.46

Guchait, 2017	cross-sectional study n = 128	Managers of hotels in S. USA Outcomes: 1. Diversity climate is positively associated with psychological safety. 2. Psychological safety is positively associated with learning behaviours.	Predictors: r=.52 r=.61 no serious limitations D
Harvey, 2019	cross-sectional study with time lagged design (3 questionnaires in 3 different times) n(T1) = 514, n(T2) = 452, n(T3) = 345	Teams (4-17 members) in the sales division of a large financial services firm in Canada	H2: Es of .31 H2: Team psychological safety (TPS) mediates the relationship between team learning orientation (TLO) and team learning (TL), such that learning-oriented teams will create a psychologically safe climate that will enhance team learning. H3: Team open-mindedness (TOM) moderates the relationship between team learning orientation and team learning as mediated by team psychological safety, such that team learning orientation has a strong positive effect on team learning via increased psychological safety when team open-mindedness is low, but not when it is high. Results did not show a significant effect for high levels of team open-mindedness (1 SD), but there were significant effects for both average ($b = .21$, $LLCI = -.50$) and low (-1 SD) levels ($b = .35$, $LLCI = .17$, $ULCI = .64$). TLO&TPS: $\beta = .41$ TPS&TL: $\beta = .51$ TLO&TL: $B = .16$ (ns) TLO&TOM&TPS $= -.49$ C
Hetzner, 2015	cross-sectional study n = 84	Client advisors specialised in private customer consulting; retail banking departments in branches of a German bank	H3a: Psychological safety– colleagues exerts a positive effect on reflection. H3b (rejected): Psychological safety–supervisors exerts a positive effect on reflection. H3a: $\beta = .24$ No serious limitation D

Huyghhebaert, 2018	cross-sectional study with time lagged design (questionnaires in 2 different times) n = 590 (107 teams)	Software implementation project teams * TM – memory that is influenced by knowledge of the memory system of another person. ** NA - increases the tendency to overreact to and ruminate over unfavorable information regarding ones' self and others. *** PA - reflects the tendency to be energetic, cheerful, and optimistic.	H1: $r = .40$; $\beta = 0.25$; $\Delta R^2 = .13$ H2a: $\beta = -0.37$; $\Delta R^2 = .33$ H2b: $\beta = 0.34$; $\Delta R^2 = .33$ H3 (partially supported – only "a"): Team PS mediates the relationship between team (a) negative and (b) positive affectivity and TMS. * TM – memory that is influenced by knowledge of the memory system of another person. ** NA - increases the tendency to overreact to and ruminate over unfavorable information regarding ones' self and others. *** PA - reflects the tendency to be energetic, cheerful, and optimistic.
Ifzal, 2019	cross-sectional study with time-lagged design n =658	Nurses from four acute-care hospitals in the Midwest United States	H2: Psychological safety toward one's supervisor mediates the impact of leader behaviour integrity on occupational safety such that (a) fewer injuries, (b) less severe injuries, and (c) higher proportion of injuries reported.
		Public sector healthcare organisation of Pakistan n = 177	H2: Psychological safety mediates the relationship between ethical leadership style (ES) and job satisfaction (JS).

cross-sectional study with time lagged design (questionnaires in 2 different times) n = 180	Employees of the small and medium enterprises in the Textile Industry in Pakistan H2: Psychological safety (partially) mediates the relationship between inclusive leadership (IL) and innovative work behaviour (IWB).	$\beta = 0.22$ No serious limitation	C
Javed, 2019	Managers and supervisors of the telecom industry in Mumbai, India H1: Psychological safety (PS) is positively related to psychological empowerment (PE). H3: PE mediates the relationship between PS and employee retention (ER). H4a: Abusive leadership moderates the relationship between PS and PE. H4b: There is a conditional indirect effect of PS on ER in such a way that when abusive leadership is high the relationship is weak via PE and when abusive leadership is low the relationship is strong via PE.	$H1: r = .55;$ $\beta = 0.46$ $H3: \beta = 0.31$ $H4a: \beta = 0.57$ $H4b: N/A$ $PS - ER: r = .46$	D
Jha, 2019-2	Functional teams from 20 different organisations from various sectors, such as manufacturing, FMCG, ITES, pharma, banking, and shipping organisations, in India H1: Psychological safety is positively related to team performance. H2: Learning orientation mediates the relationship between psychological safety and team performance. H3b: Psychological safety and team performance through learning orientation such that the relationship is strong for team members with high psychological empowerment.	$H1: \beta = 0.26$ $H2: \beta = 0.30$ $H3b: unclear$	D

	<p>Study 1: Participants from the US Study 2: n = 66 Study 2: Cross-sectional study n = 176 Kim, 2019-2</p> <p>H1: There is a positive association between individuation* and the perception of psychological safety.</p> <p>H2a: Perceived psychological safety will be positively associated with organisational identification.</p> <p>H2b: Perception of psychological safety will mediate the relationship between individuation and organisational identification.</p> <p>*Individuation - a view that organisational members are all unique individuals.</p>	<p>Study 1: H1: d = 1.22 H2a & H2b: unclear, un-standardised coefficients are reported (not enough data to calculate effect size)</p> <p>A</p> <p>Study 2: Unclear, un-standardised coefficients are reported (not enough data to calculate effect size)</p>

			D	
H1a: Team tenure has a U-shaped curvilinear relationship with team psychological safety climate such that new and longer tenured teams have higher levels of team psychological safety climate.				
H1b: Team tenure has a U-shaped curvilinear relationship with team psychological safety climate strength such that new and longer tenured teams have higher levels of team psychological safety climate strength.				
H2a: Team psychological safety climate is positively associated with average team member creative performance.				
H2b (rejected): Team psychological safety climate is positively associated with average team member task performance.				
H3a: The curvilinear relationship between team tenure and average team member creative performance is partially mediated by team psychological safety climate.				
H3b (rejected): The curvilinear relationship between team tenure and average team member task performance is partially mediated by team psychological safety climate.				
H4a (rejected): The positive relationship between team psychological safety climate and average team member creative performance is moderated by team psychological safety climate strength, such that when team psychological safety climate strength is high (vs. low), the positive relationship is stronger.				
H4b: The positive relationship between team psychological safety climate and average team member task performance is moderated by team psychological safety climate strength, such that when team psychological safety climate strength is high (vs. low), the positive relationship is stronger.				
H5a (rejected): The indirect curvilinear relationship between team tenure and average team member creative performance through team psychological safety climate is moderated by team psychological safety climate strength, such that when team psychological safety climate strength is high (vs. low), the positive relationship is stronger.				
H5b: The positive relationship between team psychological safety climate and average team member task performance through team psychological safety climate is moderated by team psychological safety climate strength, such that when team psychological safety climate strength is high (vs. low), the positive relationship is stronger.				
Koopman, 2016	Employees working in R&D teams for a major information technology company in China	cross-sectional study with time lagged design (questionnaires in 2 different times) n = 567 (115 teams)		C
Kuo, 2019	Employees from 12 public fitness centers in Taiwan.	uncontrolled study with a pretest n = 207 (39 groups)		

Lee, 2016	<p>cross-sectional study $n = 649$</p> <p>Nurses in 40 large hospitals in Taiwan</p>	<p>H10: Psychological safety has a positive effect on a person's intention to report incidents that person was involved (ITS).</p> <p>H11: Psychological safety has a positive effect on a person's intention to report incidents that person only has observed (ITO).</p> <p>H12 (rejected): Psychological safety has a positive effect on attitude toward incident-reporting behaviour.</p> <p>H13: Psychological safety has a positive effect on the subjective norms (SNS) of incident reporting.</p> <p>H14: Psychological safety has a positive effect on the perceived benefits (PBs) of reporting incidents.</p>	<p>H10: $\beta = 0.31$</p> <p>H11: $\beta = 0.18$</p> <p>H13, $\beta = 0.18$</p> <p>H14: $\beta = 0.35$</p>
Li, 2014	<p>cross-sectional study with time lagged design (questionnaires in 2 different times)</p> <p>$n = 283$ supervisor- subordinate dyads (283 subordinates and 112 supervisors)</p>	<p>H1: Perceptions of organisational politics (POP) is negatively related to psychological safety (PS).</p> <p>H2: Psychological safety mediates the relationship between POP and voice behaviour (VB).</p> <p>H3: Perceived insider status (PIS) moderates the negative relationship between POP and psychological safety as well as the negative relationship between POP and voice, such that the relationships are weaker for employees with high levels of perceived insider status than for those with low levels of perceived insider status.</p> <p>H4: Perceived insider status moderates the mediating effect of psychological safety on the POP–voice relationship, such that the mediating effect is weaker when the level of perceived insider status is high rather than low.</p>	<p>H1: $\beta = -.20$</p> <p>H2: POP&VB: $\beta = -.21$ PS&VB: $\beta = .37$ POP&VB&PS: $\beta = -.11$, n.s.</p> <p>H3: POPxPIS&PS: $\beta = .14$ POPxPIS&VB: $\beta = .16$</p> <p>C</p> <p>POP&PS: PIS low: $r = -.34$ PIS high: $r = -.06$</p> <p>POP&VB PIS low: $r = -.37$ PIS high: $r = -.05$</p> <p>H4: unclear</p>

Liu, 2015	cross-sectional study with time lagged design (questionnaires in 2 different times) n = 718	Large telecom corporation in South China	H2: Employees' perceptions of team psychological safety mediate the relationship between authentic leadership and internal whistleblowing. H1: Abusive supervision is negatively related to psychological safety.	$\beta = 0.24$ $\beta = 0.21$ No serious limitation C
Liu, 2016	cross-sectional study with time lagged design (questionnaires in 2 different times) n = 423	A company operating in a large state-owned enterprise in the city of Changsha in China	H3: Psychological safety mediates the effect of abusive supervision on organisation identification. H4 (rejected): Psychological safety is positively related to employee creativity. H6: Organisational identification mediates the effect of psychological safety on employee creativity. H7: The effect of abusive supervision on creativity is mediated by psychological safety.	H1: $r = -.35$ No serious limitation C
Liu, 2018	cross-sectional study n = 107 matching pairs of employees and supervisors	A large health organisation with over 500 employees, southern part of the USA	H2: Authentic leadership is positively related to subordinates' perceptions of their psychological safety. H6: The positive relationship between authentic leadership and subordinates' proactive behaviour is mediated by psychological safety. H7: The negative relationship between authentic leadership and subordinates' workplace deviance behaviour is mediated by psychological safety.	H2: $r = .46$ No serious limitation D
Malhotra, 2017	cross-sectional study U.S., various n = 149 teams		H1: Psychological safety mediates the relationship between functional dominance and cross-functional teams (CFT) performance such that functional dominance negatively relates to psychological safety and psychological safety positively relates to performance. H2: Psychological safety mediates the relationship between interpersonal justice and CFT performance such that interpersonal justice positively relates to psychological safety and psychological safety positively relates to performance. H3: CFT leader's interpersonal justice moderates the relationship between functional dominance and psychological safety such that the negative impact of functional dominance on psychological safety is attenuated by CFT leader's interpersonal justice.	Not clear whether the reported coefficients are standardised or not. No serious limitation D

<p>Malik, 2018</p> <p>cross-sectional study</p> <p>n = 233</p>	<p>H2: Psychological safety is positively related to internal whistleblowing.</p> <p>H3: Ethical leadership is positively related to psychological safety.</p> <p>H4: Psychological safety mediates the relationship between ethical leadership and internal whistleblowing.</p>	<p>Procedure of data collection could have been described more in detail. Data analysis could be more clear</p> <p>D-</p>	<p>H2: r = .36</p> <p>H3: r = .30</p> <p>H4: Unclear</p>	<p>The procedure of data collection could be clearer</p> <p>D</p>
<p>Matteo, 2016</p> <p>cross-sectional study</p> <p>n = 195</p>	<p>Physicians, psychologists, physiothera- pists, nurses and other healthcare oper- ators from three Italian H&PCOs (hospice and palliative care organisations?)</p>	<p>H2 (rejected): Employees' perception of psychological safety positively affects their innovative work behaviour (IWb).</p> <p>H3 (partially supported): Employees' perception of psychological safety positively affects their knowledge sharing behaviour.</p> <p>H5: Employees' perception of structural social capital positively affects their perception of psychological safety.</p> <p>H6: Employees' perception of relational social capital positively affects their perception of psychological safety.</p>	<p>$\beta = .28$</p> <p>$\beta = .38$</p> <p>$\beta = .19$</p> <p>$\beta = .57$</p>	<p>The origin of the items used to measure psychological safety could be clearer</p> <p>D</p>
<p>Mayfield, 2016</p> <p>cross-sectional study</p> <p>n = 260 (58 teams)</p>	<p>Graduate and upper-division undergraduate students enrolled in business and education courses in a large southern- central university (USA)</p>	<p>H4: Team psychological safety will moderate the relationship between psychological collectivism and (a) team satisfaction, (b) team identification, and (c) willingness to work with teammates such that the effects of psychological collectivism will be weakened under conditions of high team psychological safety.</p>	<p>unclear</p>	<p>No serious limitation</p>
<p>Moore, 2017</p> <p>cross-sectional study</p> <p>n = 200</p>	<p>Mentored executives and entrepreneurs from 14 countries</p>	<p>H2: The mentees' perception of psychological safety in the organisation mediates the relationship between the quality of mentoring they receive and their perception of organisational innovativeness.</p>	<p>unclear</p>	<p>The procedure of data collection could be clearer</p> <p>D</p>

		ZO correlations: psyc safety > performance: $r = .44$	D	
Schaubroeck, 2011	cross-sectional study n = 191	F1: Affect-based trust in the leader is positively related to team performance through the mediating influence of team psychological safety. H4: Controlling for transformational leadership, servant leadership is positively related to team psychological safety through the mediating influence of team members' affect-based trust in the leader.	servant leadership > psyc safety: $r = .37$	no serious limitations
Scheepers, 2018	cross-sectional study n = 105		H2 & H4: only SEM coefficients are provided	only un-standardized regression coefficient are reported
Shumski, 2018	longitudinal study n = 80			ZO correlations surf act - psyc safety: $r = .33$
Spoelma, 2017	undergraduate students at a large public university in the US two RCT's n = 376 (184 teams)	H2. Surface acting in meetings is negatively related to perceptions of meeting psychological safety. employees from a construction materials company in the southeast United States	H2 & H3: only unstandardized beta's are reported Note: Surface acting is a type of emotion regulation in which an individual simulates desired emotions without feeling them (Hochschild, 1983). For example, employees engage in surface acting when they smile and pretend to be happy, when they are actually angry and frustrated.	high non response and drop-out
				small to medium? sloppy reporting of effect sizes

	ZO corr: psyc safety – c-workers upw voice: .45 D	H3. Psychological safety mediates the relationship between the co-workers' upward voice and employee upward voice. H4. Psychological safety mediates the relationship between manager pro-voice behaviour and employee upward voice.	H3 & H4: only SEM coeff are reported	no serious limitations
Subhakaran, 2018	cross-sectional study n = 575	employees from technology firms in India		
Torralba, 2016	cross-sectional study n = 13,044	resident physicians at VA medical centers (in the US?)		
Triplet,	cross-sectional study n = 131	adult workers employed in organisations within Western Australia		

		H2: Perceived psychological safety mediates quality of managerial relationship and voice behaviour. Mediation of psychological safety for promotive voice (SV and CV) is positive (a), for prohibitive voice (DEFV and DESV) is negative (b).	H2; small to moderate r's and beta's Hx: R2=.04, $\beta = .65$	D	
		Hx: Managerial relationship significantly adds on perceived psychological safety Note: Supportive voice (SV): includes voluntary expression of supporting ideas to the existing work units. Constructive voice (CV): it includes voluntary expression of ideas or opinions for a functional change, which can improve the organisation positively. Defensive voice (DEFV): includes the expression of objections about probable changes in the organisation and verbally opposing changes to work policies, even though changes are required. For example, speaking out against changing work policies, even when the changes have merit. Destructive voice (DESV): it includes the voluntary expression of hurting the company by communicating hurtful or critical ideas related to the policies or procedures (i.e. bad-mouthing the organisation's policies or objectives)	H2; small to moderate r's and beta's Hx: R2=.04, $\beta = .65$	D	
		H1: Humble leadership is positively correlated with psychological safety Note: leader humility involves acting with a calm and quiet demeanour, motivating followers with inspiring standards rather than charisma, and giving credit for success to the team while accepting blame for poor results. Alternatively, characteristics of authentic leaders—a sense of self-awareness, expression of values, and transparency regarding desires and expectations—have also been described as intrinsically humble. Furthermore, both transformational leadership and servant leadership, two similar yet distinct perspectives, possess features that could be characterised as expressions of humility—appreciation of others, mentoring or teaching, and empowering followers.	H1: r = .64 H1: r = .64 H3: Psychological safety is positively related to organisational commitment.	D- Sample unclear	
		cross-sectional study n = 286 Unler, 2019	unclear (MTurk) WalterS, 2016	unclear Wang, 2019	small sample, results unclear D-
		cross-sectional study n = 140 Yanchus, 2015	cross-sectional study n = 11,726 Yoon, 2017	psychiatrists, psychologists, social workers, and mental health nurses in the VHA managers and employees from small and medium enterprises	large Psychological safety was measured with only one item. no serious limitations C

Excluded studies

Author & year	Reason for exclusion
Applebaum, 2018	Doesn't examine predictors or outcomes of psychological safety.
Aranzamendez, 2015	Literature review.
Aufegger, 2019	Narrative review, no quantitative outcomes or effect sizes are reported.
Rown, 2016	Qualitative study.
Cave, 2016	Insufficient data reported / not quantitative study.
Christian, 2009	Concerns psychological safety climate, a related but conceptually different construct (= individual perceptions of safety-related policies, practices, and procedures pertaining to safety matters that affect personal well-being at work).
Dahl, 2017	Study protocol.
Edmondson, 2014	Narrative review, no quantitative outcomes or effect sizes are reported.
Jahanzeb, 2018	This study investigates the sequential mediating effects of threats to efficacy needs and defensive silence between supervisor ostracism and emotional exhaustion, explained through need-threat/need fortification framework; psychological safety is not included in the tested model.
Jahanzeb, 2018-2	This study investigated the mediating effects of defensive silence and emotional exhaustion between ostracism and interpersonal deviance, explained through transactional theory of stress and coping; psychological safety is not included in the tested model.
Jimmieson, 2016	Not about psychological safety. Safety climate is operationalized in relation to hand hygiene. Authors' definition of psychological safety climate is 'individual's evaluation of the importance one's organisation (or workgroup) places on safe work practices.'
Halbesleben, 2013	Not about psychological safety. Psychological safety climate (PSC) is defined in this study as 'specific policies, practices, and procedures for the protection of worker psychological health and safety'.

Newman, 2017	Narrative review, no quantitative outcomes or effect sizes are reported.
Nielsen, 2016	Not about psychological safety. The Safety Climate Questionnaire (Zohar & Luria, 2005) were used to assess psychological safety climate. The items assess psychological safety climate in the work group. The safety climate items cover a range of interaction modes between supervisors and group members by which supervisors can indicate the priority of safety versus competing goals such as production speed or schedules.
O' Neil, 2018	Narrative review, no quantitative outcomes or effect sizes are reported.
Probst, 2010	Not psychological safety. The measure of organisational safety climate included: management values (e.g., "Management places a strong emphasis on workplace health and safety"), safety communication (e.g., There is open communication about safety issues within this workplace), safety training (e.g., Safety issues are given a high priority in training programs), and safety systems (e.g., There are systematic procedures in place for preventing breakdowns in workplace safety).
Salas, 2018	Narrative review, no quantitative outcomes or effect sizes are reported.
Wang, 2018	1. Concerns employees from software firms in the Guangdong province (China), DV (eg humble leadership) may be confounded due to culture differences. 2. Does address reversed causation. 3. Outcome (follower creativity) not relevant.





Australian
National
University

A partnership between the ACT Government through the ACT public health system and the ANU Research School of Management.

Any enquiries in relation to the content of this REA should be directed to CEBMa through their website: www.cebma.org



ACT
Government

ACT Health

Calvary



ACT
Government

Canberra Health
Services