

**CIPD**

# Psychological --- safety

An evidence review

Scientific summary  
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## 1 Introduction

### Rationale for this review

In discussions of the need to develop organisations that are effective and healthy, one area that is sometimes seen as a priority is psychological safety. This scientific summary presents the results of 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. The REA was commissioned by the CIPD and completed by the Center for Evidence-Based Management (CEBMA) in 2023. It is an update of an earlier REA on the same topic commissioned by the Australian Capital Territory (ACT) Public Health System and conducted by CEBMA in January 2020.

### What is a rapid evidence assessment?

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 are often lacking and studies are selected based on the researcher's individual preferences. As a result, conventional literature reviews are prone to severe bias. This is why rapid evidence assessments (REAs) are used. This type of review uses a specific research methodology to identify the most relevant studies on a specific topic as comprehensively as possible, and to select appropriate studies based on explicit criteria. In addition, the methodological quality of the studies included is assessed by two independent reviewers on the basis of explicit criteria. In contrast to a conventional literature review, an REA is transparent, verifiable and reproducible, and, as a result, the likelihood of bias is considerably smaller.

### Main question: What does the review 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?
- 5 What interventions enhance psychological safety?

## 2 Methods

### Search strategy: How was the research evidence sought?

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

- scholarly journals, peer-reviewed
- published in the period 2000 to 2003
- articles in English.

A search was conducted using combinations of different search terms, including ‘psychological safety’, ‘antecedents’, ‘predict’, ‘characteristics’ and ‘factors’.

An overview of all search terms and queries is provided in Appendix 1.

### Selection process: How were studies selected?

Study selection took place in two phases. First, titles and abstracts of the 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 350 studies. Second, studies were selected based on the full text of the article using these inclusion criteria:

- type of studies: focusing on quantitative, empirical studies
- measurement: only studies in which relationships among team or organisational attributes, interventions and outcomes were quantitatively measured
- context: only studies related to workplace settings
- 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 89 secondary studies. An overview of the selection process is provided in Appendix 2.

### Critical appraisal

In almost any situation, it is possible to find a scientific study to support or refute a theory or a claim. So, it is important to determine which studies are trustworthy (ie valid and reliable) and which are not. The trustworthiness of a scientific study is first determined by its methodological appropriateness. For cause-and-effect claims (ie if we do A, will it result in B?), a study has a high methodological appropriateness when it fulfils the three conditions required for causal inference: co-variation, time-order relationship and elimination of plausible alternative causes (Shaughnessy and Zechmeister, 2012). A study that uses a control group, random assignment and a before-and-after measurement is therefore regarded as the ‘gold standard’. Non-randomised studies and before-after studies come next in terms of appropriateness. Cross-sectional studies (surveys) and case studies are regarded as having the greatest chance of showing bias in the outcome and therefore fall lower in the ranking in terms of appropriateness. Meta-analyses in

which statistical analysis techniques are used to pool the results of controlled studies are therefore regarded as the most appropriate design.

To determine the methodological appropriateness of the included studies' research design, the classification system of Shadish, Cook and Campbell (2002), and Petticrew and Roberts (2006) was used. The levels of appropriateness used for the classification are shown in Table 1.

**Table 1: Methodological appropriateness of study research design**

<i>Design</i>	<i>Level</i>
Systematic review or meta-analysis of randomised controlled studies	AA
Systematic review or meta-analysis of controlled before-after studies	A
Randomised controlled study	
Systematic review or meta-analysis of non-controlled and/or before-after studies	B
Non-randomised controlled before-after study	
Interrupted time series	
Systematic review or meta-analysis of cross-sectional studies	C
Controlled study without a pretest or uncontrolled study with a pretest	
Cross-sectional study	D

It should be noted, however, that the level of methodological appropriateness as explained above is only relevant in assessing the validity of a cause-and-effect relationship that might exist between a predictor/driver (eg psychological safety) and its outcomes (eg performance), which is the purpose of this review.

In addition, a study's trustworthiness is determined by its methodological quality (its strengths and weaknesses). For instance, was the sample size large enough and were reliable measurement methods used? To determine methodological quality, all the studies included were systematically assessed on explicit quality criteria. Based on a tally of the number of weaknesses, the trustworthiness was downgraded and the final level determined as follows: a downgrade of one level if two weaknesses were identified; a downgrade of two levels if four weaknesses were identified, and so on.

Finally, the effect sizes were identified. An effect (eg a correlation, Cohen's d or omega) can be statistically significant but may not necessarily be of practical relevance: even a trivial effect can be statistically significant if the sample size is big enough. For this reason, the effect size - a standard measure of the magnitude of the effect - of the studies included was assessed. To determine the magnitude of an effect, Cohen's rules of thumb (Cohen, 1988) were applied. According to Cohen a 'small' effect is an effect that is only visible through careful examination.

A 'medium' effect, however, is one that is 'visible to the naked eye of the careful observer'. Finally, a 'large' effect is one that anybody can easily see because it is substantial.

**Critical appraisal: What is the quality of the studies included?**

The overall quality of the studies included was rather low. Of the 89 studies included, most studies had a cross-sectional design and were therefore graded quality level D. Only eight studies were classified as level B or higher, including two meta-analyses. An overview of all the studies included and information regarding year of publication, research design, sample size, population, main findings, effect sizes and limitations is provided in Appendix 3.

### **3 Main findings**

**Question 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 capable 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 organizational improvements, and take initiative to develop new products and services" (Edmondson and Lei, 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 et al, 2018).

A construct related to but distinct from psychological safety is trust, often defined as the willingness to be vulnerable to the actions of others (Mayer et al, 1995). However, Edmondson distinguishes the two constructs by emphasising their different focus. Specifically, trust captures a person's willingness to be vulnerable to others - reflecting their 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 them the benefit of the doubt when taking risks (Edmondson and Lei, 2014).

**Question 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, listed in Appendix 4.

**Question 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, making it a critical concept for managing teams and organisations. Table 2 provides an overview of these outcomes. Effect sizes found in meta-analyses indicate that psychological safety is strongly associated ( $r > .5$ ) with:

- co-workers' support

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- employee voice/silence
- information-sharing
- (team) learning behaviour
- team performance
- proactivity
- psychological empowerment
- retention/turnover
- team cohesion
- work engagement
- safety outcomes.

It should be noted, however, that many factors listed in Table 2 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.

Finally, studies included in this review also indicate that psychological safety moderates and/or mediates<sup>1</sup> 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 et al, 2019). The same counts for empowering, authentic, transformational, inclusive and ethical leadership styles - their positive effect on outcomes such as innovation, proactive behaviour, constructive voice, organisational citizenship behaviour and occupational safety only occurs when employees perceive their organisation and/or team as psychologically safe (Brimhall et al, 2023; Castro et al, 2018; Fu et al, 2022; Huyghebaert et al, 2018; Ifzal and Waheed Ali, 2019; Javed et al, 2019; Khan et al, 2020; Kim at al, 2019; Lee et al, 2021; Liu et al, 2018; Ma et al, 2021; Malik and Nawaz, 2018; Ortega et al, 2014; Rao and Mukhopadhyay, 2018).

**Table 2: Psychological safety - zero-order correlations**

Outcome	Effect size	Level	Studies
Adaptability	.65	D	Cai, 2018
Burnout, emotional exhaustion	-.75, -.37	D, D	Ma, 2021; Rathert, 2022
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; Liu, 2016; Mura, 2016
Employee voice/silence	.24, .50, .19, .60, .52	C, C, D, D, C	Chamberlin, 2017; Elsaied, 2019; Erkutlu, 2015; Rao, 2018; Hao, 2022;

<sup>1</sup> A 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. 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.



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			Lee, 2021
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, .73, .60	A, B, A, D, D, C	Ashauer, 2013; Frazier, 2017; Guchait, 2014; Jha, 2019-2; Kim, 2020; Nellen, 2020
Organisational citizenship behaviour	.34		Clark, 2014
Organisational deviance	-.33	D	Erkutlu, 2019
Organisational identification	.34	D	Erkutlu, 2015
Performance, task	.43, .24	B, D	Frazier, 2017; Wang, 2021
Performance, team	.23, .50, .63, .71, .40, .34	A, D, D, C, D, D	Applebaum, 2019; Ashauer, 2013; Chi- Cheng, 2018; Guchait, 2014; Jha, 2019- 2; Lavelle, 2022
Pro-activity	.61	D	Cai, 2018
Problem-solving capacity	.30	C	Carmeli, 2014
Psychological empowerment	.55	D	Jha, 2019-1
Psychological wellbeing	.33	D	Erkutlu, 2016
Psychological contract breach	-.27	D	Erkutlu, 2016
Reflexivity	.23	C	Carmeli, 2014
Resilience	.31	D	Cai, 2018
Safety behaviour/outcomes	.30, .23, .17	D, D, D, D	Brimhall, 2023; Han, 2020; Lee, 2021; Nixon, 2015

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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
Team effectiveness	.63	D	Kim, 2020
Transactive memory system	.59, .40, .77	D, C, D	Chi-Cheng, 2018; Hood, 2016; Guchait, 2014
Turnover intentions	-.27, -.58, -.46, -.40, -.41	D, D, D, D, D	Ahmad, 2017; Da Silva, 2012; Jha, 2019-1; Nixon, 2025;
Trust in team members	.63	D	Aamir, 2013
Trust in top management	.28	D	Aamir, 2013
Work engagement	.39, .54, .45	D, D, B	Aamir, 2013; Basit, 2017; Frazier, 2017

**Question 4: What are the antecedents of psychological safety?**

In addition to studies examining the relationship of psychological safety to organisational outcomes, this review identified several studies of the antecedents or predictors of psychological safety. Table 3 provides an overview of these antecedents. The effect sizes indicate that the following factors are strong predictors of psychological safety in teams and/or organisations.

**Table 3: Antecedents of psychological safety**

Antecedent	Effect size	Level	Studies
Cooperative conflict management style	r=.23/.31	D	Erkutlu, 2015
Diversity climate	r=.52	D	Guchait, 2017
Empowering leadership	r=.63; .42	D, D	Rao, 2018; Rathert, 2022
Ethical leadership	r=.30	D	Malik, 2018
Individuation	d=1.22	A	Kim, 2019
Leader's age	r=.23	D	Gonzalves, 2017

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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
Leadership - abusive	r=-.35	C	Liu, 2016
Leadership - authentic	r=.36; .46	D, D	Anugerah, 2019; Liu, 2018
Leadership - benevolent	r=.31	D	Erkutlu, 2016
Leadership - change-oriented	r=.51	D	Ortega, 2014
Leadership - inclusive	r=.49	D	Fu, 2022
Leadership - self-worth	r=.55	D	Brimhall, 2023
Leadership - servant	r=.37; .58	D, D	Schaubroek, 2011; Ma, 2021
Leadership - supportive	r=.32	C	Elsaied, 2019
Leadership - transformational	r=.22; .82	C, D	Carmeli, 2014; Wang, 2021
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
Supervisor's listening	$\beta$ =.38	AA	Castro, 2018
Team affect (pos/neg)	r=.34/- .37	C	Hood, 2016
Team tenure	U-shaped	D	Koopman, 2016
Trust in supervisor	r=.69	D	Basit, 2017

**Finding 1: Leadership style**

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

**Finding 2: Empowerment**

Leaders who share power with subordinates, give them the autonomy to make decisions by displaying trust in them and encourage 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 subordinates to express themselves freely and speak up with suggestions for improvements (Rao and Mukhopadhyay, 2018).

### **Finding 3: 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 the CIPD evidence review 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 and Macan, 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.

### **Finding 4: 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).

### **Finding 5: 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 correlates with characteristics of supportive leadership, organisational justice and participative decision-making, which are major antecedents of trust (Erkutlu and Chafra, 2015). As explained above, when employees trust their leaders, they are more likely to openly express their thoughts and opinions.

### **Finding 6: Quality of the managerial relationship**

When employees have suggestions, concerns or knowledge they want to share with their managers, whether (or not) they decide to voice these is based on their past experiences with their manager. So, 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 and Caliskan, 2019).

### **Finding 7: Team tenure**

Team tenure is likely to have a *curvilinear* (U-shaped) influence on team interpersonal dynamics and (as a result) psychological safety (Koopman, 2016). 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, 2016).

### **Question 5: What interventions enhance psychological safety?**

A recent systematic review that examined interventions to improve psychological safety in the realm of healthcare identified several types of interventions (O'Donovan and McAuliffe, 2020). Educational interventions mainly used simulation exercises, video presentations, case studies and workshops, while interventions which did not include an educational component used holistic facilitation, forum play and action research meetings. While some interventions showed improvement in outcomes related to psychological safety, this was not consistently demonstrated across interventions, mostly due to a lack of objective outcome measures. This finding is consistent with the outcome of this review, which did not find empirical studies in which the effect of interventions aimed at enhancing psychological safety was quantitatively measured. However, several antecedents listed in Table 3 exhibit strong associations with psychological safety. These antecedents may offer a valuable starting point for managers and leaders who aim to enhance employees' and/or teams' perceptions of psychological safety.

## **4 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. In addition, this review did not find evidence that these relationships may differ based on population characteristics or sector.

## **5 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, that is, studies without a control group and/or pretest. 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.

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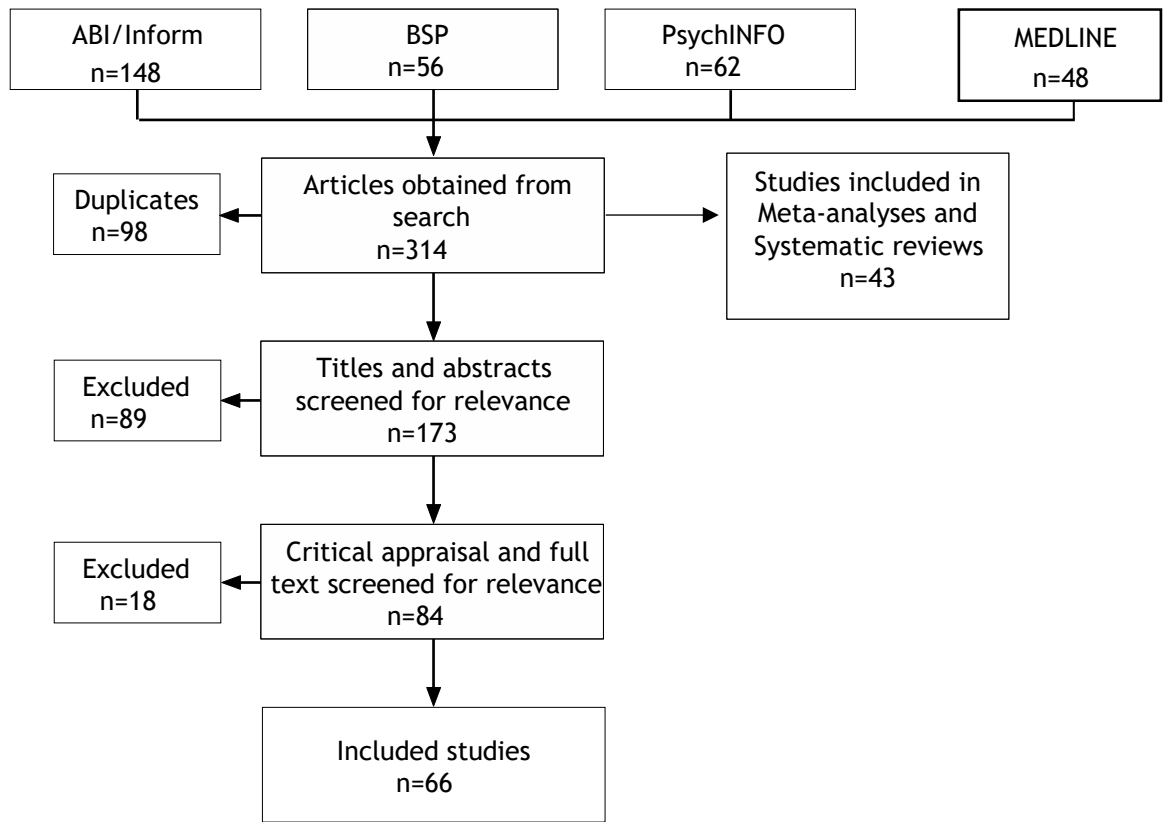
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## Appendix 1: Search terms and hits

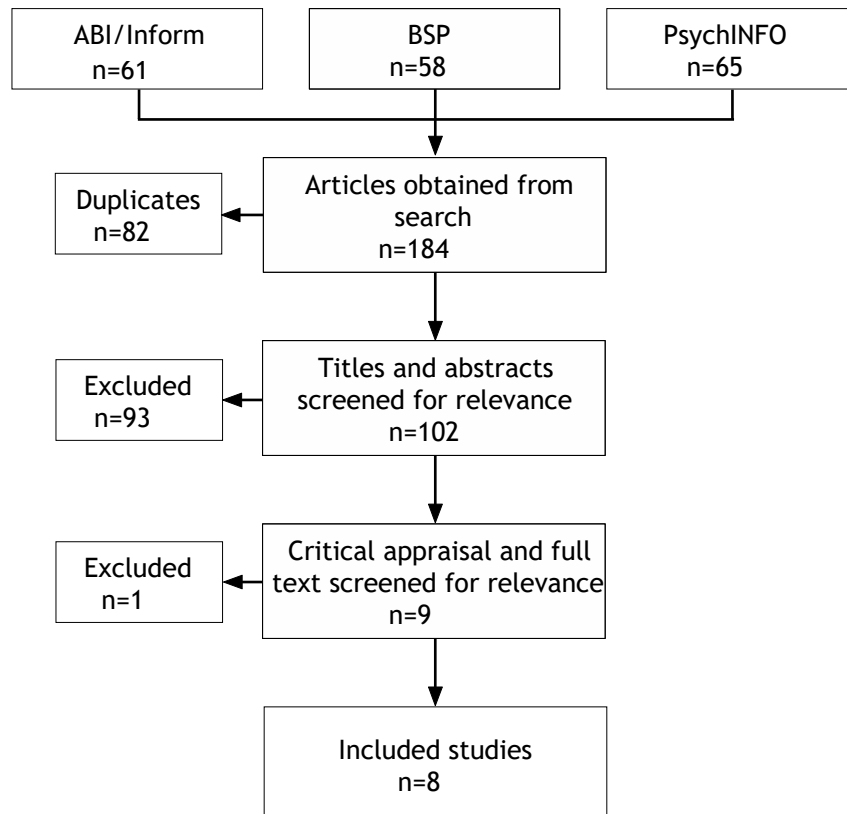
ABI/Inform Global, Business Source Elite, PsycINFO, MEDLINE peer-reviewed, scholarly journals, November 2019				
Search terms	ABI	BSP	PSY	MEDLINE
S1: ti("psychological safety") or ab("psychological safety") limit > 2000	296	269	342	145
S2: filter MAs and/or SRs	9	6	10	-
S3: ti(predict*) OR ti(antecedent*) 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	<b>148</b>	<b>56</b>	<b>62</b>	<b>48</b>

ABI/Inform Global, Business Source Elite, PsycINFO, MEDLINE peer-reviewed, scholarly journals, July 2023				
Search terms	ABI	BSP	PSY	MEDLINE
S1: ti("psychological safety") or ab("psychological safety") limit 2000	559	542	609	437
S2: filter MAs and/or SRs, limit > Nov 2019	6	4	5	15
S3: ti(predict*) OR ti(antecedent*) OR ti(characteristic*) OR ti(factor*) OR ti(moderat*) OR ti(mediat*) limit > Nov 2019	27,890	35,059	59,269	-
S4: S1 AND S3	55	54	60	-
S5: S2 OR S4	61	58	65	-
S6: S1 AND ti(nurs* OR physician* OR doctor* OR clinician* OR hospital* OR healthcare OR "health care" OR medical limit > 2013	24	25	34	37

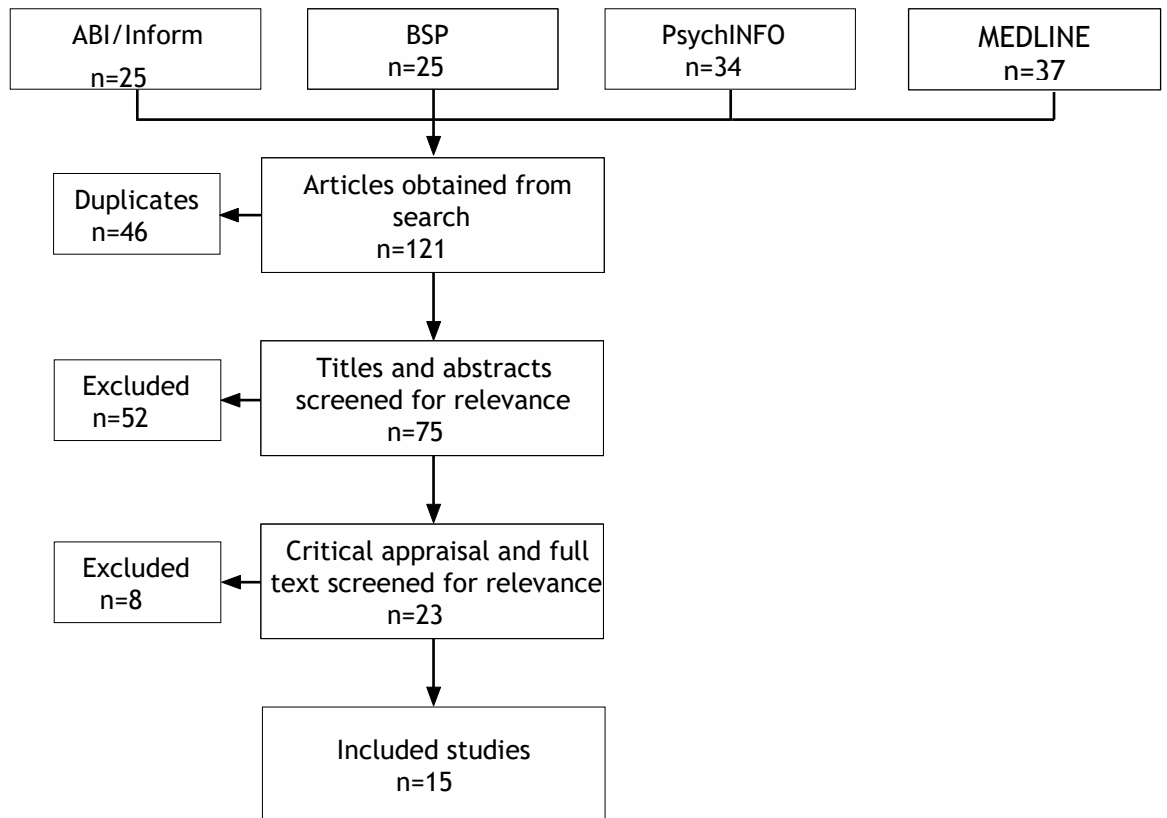
## Appendix 2: Study selection



### Update 2023



Studies related to healthcare



### Appendix 3: Appraisal of meta-analyses

Author & year	Design & sample size	Sector/population	Main findings	Effect sizes	Limitations	Level
1. Aamir, 2013	cross-sectional survey n=170	research scientists in Ireland	<p>Predictors:</p> <ol style="list-style-type: none"> <li>1.Trust in top management is positively associated with psychological safety.</li> <li>2.Trust in team members is positively associated with psychological safety.</li> </ol> <p>Outcomes:</p> <ol style="list-style-type: none"> <li>3.Team psychological safety is positively associated with work engagement.</li> </ol>	<p>1.r=.28</p> <p>2.r=.63</p> <p>3.r=.39</p>	no serious limitations	D
2. 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"> <li>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.</li> <li>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.</li> </ol> <p>Outcomes:</p> <ol style="list-style-type: none"> <li>3.Psychological safety is positively associated with creativity implementation.</li> </ol>	<p>1.r =.61</p> <p>2.r =.72</p> <p>3.r =.56</p>	no serious limitations	D

3. Ahmad, 2019	cross-sectional survey (outcome reported by supervisors)  n=339 dyads (employee & supervisor)	employees in the telecom industry in Pakistan	Predictors: 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.  Outcomes: 3. Psychological safety is positively associated with creative performance.	1.r=.31 2.r=-.42 3.r=.25	no serious limitations	D
4. Ahmand, 2017	cross-sectional survey  n=276 employees	employees in a public oil & gas company in Pakistan	Predictors: 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.  Outcomes: 3. Psychological safety is negatively associated with turnover intentions.	1.r=.32 2.r=-.49 3.r=-.27	no serious limitations	D
5. Anugerah, 2019	cross-sectional survey  n=201 employees	employees in public sector in Indonesia	Predictors: 1. Authentic leadership is positively associated with psychological safety.  Outcomes: 2. Psychological safety is positively associated with internal whistleblowing.	1.r=.36 2.r=.37	no serious limitations	D
6. Applebaum, 2019	cross-sectional survey  n=243	students in a nursing programme and doctor of medicine programme in the USA	Predictors: 1. Perceived power distance is negatively associated with psychological safety.  Outcomes: 2. Psychological safety is positively associated with perceived team cohesion. 3. Psychological safety is positively associated with perceived team effectiveness.	1.r=-.36 2.r=.47 3.r=.50	no serious limitations	D

7. Ashauer, 2013	randomised controlled study without a pre-measure  n=213 students in 71 teams of three	students at a university in the midwestern USA	<p>Predictors: 1. Leader-assigned mastery goals are associated with higher team psychological safety than leader-assigned performance goals or no goals.</p> <p>Outcomes: 2. Team psychological safety is positively associated with team learning behaviour. 3. Team psychological safety is positively associated with team performance quality. 4. Team psychological safety is positively associated with team performance quantity.</p> <p>Note: Leader-assigned mastery goals alleviate concerns about threat to image, because they focus attention on rectifying a problematic situation (Dweck, 1986; Dweck &amp; Leggett, 1988) as opposed to proving competence.</p>	<p>1. perf goal/no goal: d=.78/d=.59</p> <p>2. r=.51</p> <p>3. r=.23</p> <p>4. r=.12 (ns)</p>	no serious limitations	A
8. Basit, 2017	cross-sectional survey  n=337	nurses in a public hospital in Malaysia	<p>Predictors: 1. Trust in supervisor is positively associated with psychological safety.</p> <p>Outcomes: 2. Psychological safety is positively associated with job engagement (physical, emotional and cognitive engagement). 3. Felt obligation partially mediates the relationship between psychological safety and job engagement.</p>	<p>1. r=.62</p> <p>2. overall engagement: r=.54, structural path estimate for direct relationship=.29; physical eng.: r=.38; emotional eng.: r=.50; cognitive eng.: r=.52</p>	no serious limitations	D



9. Byrne, 2017	cross-sectional survey  n=709	Amazon Mechanical Turk members	<p>Predictors</p> <ol style="list-style-type: none"> <li>1.Attachment anxiety is negatively associated with psychological safety.</li> <li>2.Attachment avoidance is negatively associated with psychological safety.</li> </ol> <p>Outcomes</p> <ol style="list-style-type: none"> <li>3.Psychological safety is positively associated with employee engagement.</li> </ol>	<ol style="list-style-type: none"> <li>1.r=-.24</li> <li>2.r=-.36</li> <li>3.r=.57</li> </ol>	uses M-Turk participants without clearly checking if they are employed	D-
10. Cai, 2018	cross-sectional survey  n=167	employees in China	<p>Predictors:</p> <ol style="list-style-type: none"> <li>1.Enterprise social media (digital platform for internal communication and social interaction within an enterprise) usage is positively associated with psychological safety.</li> </ol> <p>Outcomes:</p> <ol style="list-style-type: none"> <li>2.Psychological safety is positively associated with proactivity.</li> <li>3.Psychological safety is positively associated with adaptability.</li> <li>4.Psychological safety is positively associated with resilience.</li> </ol>	<ol style="list-style-type: none"> <li>1.r=.19</li> <li>2.r=.61</li> <li>3.r=.65</li> <li>4.r=.31</li> </ol>	no serious limitations	D
11. Castro, 2018	meta-analysis of 5 studies, including 2 experimental studies total n=744	online panel of 366 working employees in Israel	<ol style="list-style-type: none"> <li>1. Supervisor's listening is positively associated with subordinate's psychological safety.</li> <li>2. Psychological safety is positively related to creativity.</li> <li>3. The effect of supervisor's listening on employee's creativity is mediated by employee's psychological safety.</li> </ol>	<ol style="list-style-type: none"> <li>1. <math>B=.38</math> 95% CI [.27, .50]. <math>d=0.51</math></li> <li>2. moderate r's</li> </ol>	artificial tasks and settings	A
12. Carmeli, 2014	time-lagged survey (3 waves, 2-week lag)  n=302	part-time students (and employees) in business schools in Israel	<p>Predictors:</p> <ol style="list-style-type: none"> <li>1.Transformational leadership predicts psychological safety.</li> </ol> <p>Outcomes:</p> <ol style="list-style-type: none"> <li>2.Psychological safety predicts reflexivity.</li> <li>3.Psychological safety predicts creative problem-solving capacity.</li> <li>4.Reflexivity partially mediates the relationship between psychological safety and creative problem-solving capacity.</li> </ol>	<ol style="list-style-type: none"> <li>1.r=.22</li> <li>2.r=.23</li> <li>3.r=.30</li> </ol>	no serious limitations	D+

13. Chamberlin, 2017	meta-analysis of correlational studies k=189 n=71,820	various	1. Psychological safety is positively related to voice. 2. Psychological safety is negatively associated with fear.	1. $\rho=.24$ 95% CI [.20, .28]) 2. $\rho=-.34$	methodological quality of included studies not assessed	C
14. Chi-Cheng, 2018	cross-sectional survey n=366	R&D employees in organisations in Taiwan	Predictors: 1. Knowledge integration is positively associated with psychological safety. 2. Knowledge-sharing is positively associated with psychological safety. 3. Social network ties are positively associated with psychological safety. 4. Transactive memory systems are positively related with psychological safety.  Outcomes: 5. Team psychological safety is positively associated with team performance.	1. $r=.50$ 2. $r=.51$ 3. $r=.55$ 4. $r=.59$  5. $r=.63$	no notable limitations	D
15. Clark, 2014	cross-sectional survey n=94 dyads (nurse + co-worker)	nurses at hospitals in midwestern USA	Outcomes: 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. 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 narrow role definition.	1. $r=.34$ , $B=.22$ 2. $B=-.03$ for broad role definition vs. $B=.52$ for narrow role definition	no serious limitations	D
16. Cuellar, 2018	cross-sectional survey n=2,005	clinicians and staff from primary care practices in Virginia, USA	Predictors: 1. Practice ownership (independent, hospital-owned, federally qualified health centre) is associated with psychological safety: highest levels are in hospital-owned practices, followed by independent practices and then by federally qualified health centres.	$B=.36$ for hospital-owned, $B=-.26$ for federally qualified health centre (independent practice is the reference)	psychological safety is measured with just one item	D-

17. Da Silva, 2012	cross-sectional study n=93	library employees	<p>Outcomes:</p> <ol style="list-style-type: none"> <li>1. Psychological safety is positively associated with average radicalness of ideas generated.</li> <li>2. Psychological safety is negatively related to the number of ideas implemented.</li> <li>3. Psychological safety is positively associated with employees' intention to stay.</li> <li>4. Psychological safety is positively correlated with co-workers' support.</li> </ol>	<ol style="list-style-type: none"> <li>1. <math>r=.23</math></li> <li>2. <math>r=-.11</math></li> <li>3. <math>r=.58</math></li> <li>4. <math>r=.72</math></li> </ol>	no serious limitations	D
18. De Stobbeleir, 2020	cross-sectional study n=209 dyads	employees (knowledge workers) from two consulting firms (S1)	<ol style="list-style-type: none"> <li>1. Task interdependence is positively related to individuals' tendency to seek feedback from peers.</li> <li>2. Individuals' perceptions of psychological safety moderate the impact of task interdependence on peer feedback inquiry, such that task interdependence amplifies feedback inquiry from peers when individuals perceive their environment as psychologically safe.</li> </ol>	<ol style="list-style-type: none"> <li>1. <math>r=.23</math> <math>B (SEM)=.10</math></li> <li>2. <math>B (SEM)=.24</math></li> <li>3. <math>r=.09</math> <math>B (SEM)=.17</math></li> </ol>	feedback measure is self-report	D
19. Du, 2021	time-lagged (2 months) survey n=337 (102 groups)	Chinese hotel frontline employees	<ol style="list-style-type: none"> <li>1. Psychological safety (PS) mediates the negative relationship between team fault lines (TF) and hotel frontline employees' work engagement *(WE).</li> <li>2. Inclusive leadership moderates the indirect relationship between team fault lines and hotel frontline employees' work engagement through psychological safety.</li> </ol>	<ol style="list-style-type: none"> <li>1. TF - WE: <math>r=-.19</math> PS - TF: <math>r=-.40</math>; <math>\beta=-.49</math> PS - WE: <math>r=.38</math>; <math>\beta=-.56</math></li> </ol>	Barron and Kenny's method is used	D+
20. Elsaied, 2019	time-lagged (1-2 weeks) survey - outcome was assessed by supervisors n=268 employees and 56 supervisors	employees in the footwear and headgear sector in Egypt	<p>Predictors:</p> <ol style="list-style-type: none"> <li>1. Supportive leadership is positively related to psychological safety.</li> <li>2. Proactive personality is positively related to psychological safety.</li> </ol> <p>Outcomes:</p> <ol style="list-style-type: none"> <li>3. Psychological safety is positively associated with employee voice behaviour.</li> </ol>	<ol style="list-style-type: none"> <li>2. <math>r=.32</math></li> <li>3. <math>r=.42</math></li> <li>4. <math>r=.50</math></li> </ol>	no serious limitations	D+

21. Erkutlu, 2015	cross-sectional survey n=1,023	employees in multinational companies in Turkey	<p>Predictors: 1.Cooperative conflict management styles (obliging, compromising and integrating) are positively associated with psychological safety.</p> <p>Outcomes: 2.Psychological safety is positively associated with employees' organisational identification. 3.Psychological safety is positively associated with employees' voice behaviour.</p>	<p>1.obliging conflict management style: <math>r=.23</math>; compromising: <math>r=.26</math>; integrating: <math>r=.31</math></p> <p>2.<math>r=.34</math> 3.<math>r=.19</math></p>	no serious limitations	D
22. Erkutlu, 2016	cross-sectional survey n=1,009	employees in five-star hotels in Turkey	<p>Predictors: 1.Benevolent leadership is positively associated with psychological safety.</p> <p>Outcomes: 2.Psychological safety is positively associated with psychological wellbeing. 3.Psychological safety is negatively associated with psychological contract breach.</p>	<p>1.<math>r=.31</math> 2.<math>r=.33</math> 3.<math>r=-.27</math></p>	unclear if outcome measure was self-report or who was the focal leader	D-
23. Erkutlu, 2019	cross-sectional survey n=611	nurses in university hospitals in Turkey	<p>Predictors: 1.Leader psychopathy is negatively related to psychological safety. 2.Moral disengagement is negatively associated with psychological safety.</p> <p>Outcomes: 3.Psychological safety is negatively related to organisational deviance.</p>	<p>1.<math>r=-.37</math> 2.<math>r=-.28</math> 3.<math>r=-.33</math></p>	no serious limitations	D
24. Frazier, 2017	meta-analysis, includes longitudinal studies k=136 n=22,000	various	<p>1. Psychological safety is positively related to (a) proactive personality, (b) emotional stability, (c) openness to experience, and (d) learning orientation.</p> <p>2. Psychological safety is positively related to positive leader relations.</p>	<p>1a: <math>p=.35</math> 1b: <math>p=.17</math> 1c: ns 1d: <math>p=.24</math></p> <p>2: <math>p=.44</math></p> <p>3a: <math>p=.47</math></p>	methodological quality of included studies not assessed	B

	(5,000 groups)		<p>3. Psychological safety is positively related to the work design characteristics of (a) autonomy, (b) interdependence, and (c) role clarity.</p> <p>4. Psychological safety is positively related to supportive work context.</p> <p>5. Psychological safety is positively related to work engagement.</p> <p>6. Psychological safety is positively related to task performance.</p> <p>7. Psychological safety is positively related to (a) information-sharing, (b) citizenship behaviours, (c) creativity, and (d) learning behaviour.</p> <p>8. Psychological safety is positively related to (a) commitment and (b) satisfaction.</p> <p>9. Psychological safety explains variance in task performance and citizenship behaviours over and beyond other variables.</p>	<p>3b: <math>\rho=.86</math> 3c: <math>\rho=.63</math></p> <p>4: <math>\rho=.49</math></p> <p>5: <math>\rho=.45</math></p> <p>6: <math>\rho=.43</math></p> <p>7a: <math>\rho=.52</math> 7b: <math>\rho=.32</math> 7c: <math>\rho=.13</math> 7d: <math>\rho=.62</math></p> <p>8a: <math>\rho=.48</math> 8b: <math>\rho=.43</math></p> <p>9: see table 3, last 3 columns</p>		
25. Friedman, 2018	time-lagged survey (1 month lag) n=251	employees in SMEs in Israel	<p>Outcomes</p> <p>1. Psychological safety does not predict job performance.</p>	r=0.04	no serious limitations	D+
26. Gilmartin, 2018	cross-sectional study n=294 units	healthcare employees in the USA	<p>Outcome</p> <p>1. Psychological safety is negatively related to reporting of non-adherence to a safety checklist during central line insertion procedure.</p>	not reported	psychological safety is measured by only 1 item	D
27. Gonzalves, 2017	cross-sectional study	organisations in industry and service sectors	<p>Predictors:</p> <p>1. Leader's humility predicts team's psychological safety. 2. Leader's age is positively related with team psychological safety.</p> <p>Outcomes:</p>	<p>1. self-described humility: <math>r=-.01</math>; others' described humility: <math>r=.39</math> 2. <math>r=.23</math></p>	no serious limitations	D

	n=341 respondents in 73 teams		3.Team's psychological safety predicts team's psychological capital. 4.Psychological safety is positively associated with team creativity.	3.r=.54 4.r=.14		
28. Greene, 2019	cross-sectional study n=528 hospitals	hospitals in USA	Outcomes: 1.Psychological safety is positively associated with using recommended health care-associated infection (HAI) prevention practices.	1.Odds ratio between .48 and 2.37 for different infection prevention practices	no serious limitations	D
29. Guchait, 2014	time-lagged survey (2 weeks lag) n=178 (27 teams)	students in hospitality management at a university in the USA	Predictors: 1.Transactive 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.	1.r=.76 2.r=.71 3.r=.68	finding 1 is based on cross-sectional data	D+
30. Guchait, 2016	randomised controlled trial (no before measure) n=284	students in hospitality management at a university in the USA	Predictors: 1.Organisational, supervisor and co-worker 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.  *Service recovery refers to the actions service providers take to offset a customer's negative reaction to a service failure/error.	1.org. support: r=.34, supervisor support: r=.26; co-worker support: r=.25  2.r=.61 3.r=.58 4.r=.46	participants were asked to read a scenario and rate the variables based on the scenario (low external validity)	A
31. Guchait, 2017	cross-sectional study n=128	managers of hotels in southern USA	Predictors: 1.Diversity climate is positively associated with psychological safety.  Outcomes:	1.r= .52 2.r= .61	no serious limitations	D

			2. Psychological safety is positively associated with learning behaviours.			
32. Hao, 2022	meta-analysis k=168	various	1. Psychological safety is negatively related to employee silence.	$\rho = -.49$ $R^2 = .52$	a large number of hypotheses, relationships and variables were tested  design of the included studies unclear	C
33. Harvey, 2019	time-lagged survey (3 lags) 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	1. 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.  2. Team open-mindedness (TOM) moderates the relationship between TLO and TL as mediated by TPS, such that TLO has a strong positive effect on TL via increased psychological safety when TOM is low, but not when it is high.  Results did not show a significant effect for high levels of TOM (1 SD), but there were significant effects for both average ( $b = .21$ , $LLCI = .08$ , $ULCI = .50$ ) and low ( $-1$ SD) levels ( $b = .35$ , $LLCI = .17$ , $ULCI = .64$ ).	1: Es of .31 TLO&TPS: $B = .64$ TPS&TL: $B = .51$ TLO&TL: $B = .16$ (ns)  2: TLO&TPS: $B = .41$ TPS&TL: $B = .51$ TLO&TL: $B = .16$ (ns) TLOxTOM&TPS = $-.49$	no serious limitation	D+
34. Hetzner, 2015	cross-sectional study n=84	client advisers specialised in private customer consulting; retail banking department	1: Psychological safety-colleagues exerts a positive effect on reflection.  2: Psychological safety-supervisors does NOT exert a positive effect on reflection.	1: $B = .24$  2: ns	no serious limitation	D

		ts in branches of a German bank				
35. Hood, 2016	time-lagged survey n=590 (107 teams)	software implementation project teams	<p>1: Team psychological safety (PS) is positively related to transactive memory system (TMS)*.</p> <p>2a: Team negative affectivity (NA)** is negatively related to team PS.</p> <p>2b: Team positive affectivity (PA)*** is positively related to group PS.</p> <p>3 (partially supported - only (a)): Team PS mediates the relationship between team (a) negative and (b) positive affectivity and TMS.</p> <p>* TM - memory that is influenced by knowledge of the memory system of another person.  ** NA - increases the tendency to overreact to and ruminate over unfavourable information regarding oneself and others.  *** PA - reflects the tendency to be energetic, cheerful and optimistic</p>	<p>1: r=.40; B=0.25 ; ΔR<sup>2</sup>=.13</p> <p>2a: B=-0.37 ; ΔR<sup>2</sup>=.33</p> <p>2b: B=0.34 ; ΔR<sup>2</sup>=.33</p> <p>3a: NA&amp;TMS: B =.15; ΔR<sup>2</sup>=.10, Mediation: B=-.08, n.s. Medium es: κ<sup>2</sup>=0.15 (95% CI=[0.0664, 0.2572])</p>	no serious limitation	D+
36. Huyghebaert 2018	time-lagged survey n =658	nurses from four acute-care hospitals in the midwestern USA	<p>1: Psychological safety towards one's supervisor mediates the impact of leader behavioural integrity on occupational safety such that (a) fewer injuries, (b) less severe injuries, and (c) higher proportion of injuries reported.</p>	unclear what coefficients are reported	the results could be more clear (eg by providing what coefficient is reported)	D+
37. Ifzal, 2019	cross-sectional study n=177	public sector healthcare organisation in Pakistan	<p>1: Psychological safety mediates the relationship between ethical leadership style (ES) and job satisfaction (JS).</p>	B=0.0570	no serious limitation	D



38. Javed, 2019	time-lagged survey  n=180	employees of small and medium enterprises in textile industry in Pakistan	1: Psychological safety (partially) mediates the relationship between inclusive leadership (IL) and innovative work behaviour (IWB).	B =0.22	no serious limitation	D+
39. Jha, 2019-1	cross- sectional study  n=337	managers and supervisors of the telecom industry in Mumbai, India	1: Psychological safety (PS) is positively related to psychological empowerment (PE). 2: PE mediates the relationship between PS and employee retention (ER). 3: Abusive leadership moderates the relationship between PS and PE. 4: 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.	1: r=.55; B=0.46 2: B=0.31 3: B=0.57 4: N/A (PS - ER: r=.46)	no serious limitation	D
40. Jha, 2019-2	cross- sectional study  n=345 (50 teams)	functional teams from 20 different organisatio ns from various sectors, such as manufactur ing, FMCG, ITES, pharma, banking, and	1: Psychological safety is positively related to team performance. 2: Learning orientation mediates the relationship between psychological safety and team performance. 3: Psychological empowerment moderates the indirect relationship between psychological safety and team performance through learning orientation such that the relationship is strong for team members with high psychological empowerment.	1: B=0.26 2: B=0.30 3: unclear	no serious limitation	D

		shipping organisations in India				
41. Ji, 2017	cross-sectional study n=325	practitioners working in Beijing's knowledge and creative industry zones, cultural enterprises or high-tech enterprises of Beijing, and out of Beijing	<p>1: Relational capital of communities of practice (COP)* has a positive effect on practitioners' psychological safety.</p> <p>2: Structural capital of COP has a positive effect on practitioners' psychological safety.</p> <p>3: Cognitive capital of COP does NOT have a positive effect on practitioners' psychological safety.</p> <p>4: Practitioners' psychological safety has a positive effect on practitioners' innovation performance.</p> <p>* Three dimensions of the social capital in COP:  (1) <i>Structural</i> - communities of practice improve the social network for personnel having the same interest. Communities of practice provide the opportunity for individuals to develop a network of individuals who have similar interests. It helps identifying those with relevant knowledge and helps individuals within the community make connections with one another.  (2) <i>Relational</i> - communities of practice foster the sense of trust and obligations critical to building social capital through the interpersonal interactions.  (3) <i>Cognitive</i> - communities of practice help shape the terminology, norms and values used by members and allow the development of a community memory in daily conversations.</p>	<p>1: B=.59</p> <p>2: B=.17</p> <p>4: B=.19</p>	no serious limitations	D
42. Khan, 2020	time-lagged survey n=328	employees working in project-based organisations across the IT industry in Pakistan	<p>1. Psychological safety (PS) mediates the relationship between inclusive leadership (IL) and project success.</p>	<p>PS - IL r=.30</p> <p>PS - proj success r=.47</p> <p>IL - proj success</p>	no serious limitations	D+

				r=.22		
43. Kim, 2019	cross-sectional study  n=196 (52 teams)	14 large firms in South Korea, which emphasise the importance of creative ability (eg telecommunication, electronics, bioengineering, IT)	<p>1: Team-level transformational leadership is positively related to employees' individual-level psychological safety.</p> <p>2: Employees' individual-level psychological safety is positively related to employees' individual-level creativity.</p> <p>3: An employee's individual-level psychological safety and creativity sequentially mediate the relationship between team-level transformational leadership and team-level creativity.</p>	unclear what coefficient is reported	the procedure of data collection could be clearer	D

44. Kim, 2019-2	study 1: RCT  n=66  study 2: cross-sectional study  n=176	study 1: participants from the US recruited through M-Turk  study 2: 5 firms operating in the electronics, engineering, chemicals, energy, and trading industries in South Korea	1: There is a positive association between individuation* and the perception of psychological safety.  2a: Perceived psychological safety will be positively associated with organisational identification.  2b: Perception of psychological safety will mediate the relationship between individuation and organisational identification.  *Individuation - a view that organisational members are all unique individuals.	Study 1: 1: d=1.22  2a & 2b: unclear, unstandardised coefficients are reported (not enough data to calculate effect size)  Study 2: unclear, unstandardised coefficients are reported (not enough data to calculate effect size)	S1: vignette study, artificial setting  S2: no serious limitations	A
45. Kim, 2020	cross-sectional study  n=104 teams	South Korean sales and service teams	1. Team psychological safety (TPS) positively affects team effectiveness (TEF). 2. TPS positively affects team learning behaviour (TLB). 3. TPS positively affects team efficacy (TE). 4. TLB positively affects TEF. 5. TLB positively affects TE. 6. TE positively affects TEF. 7. TLB mediates the relationship between TPS and TE. 8. TE mediates the relationship between TPS and TEF.	1. r=.63 B (SEM)=.04 ns  2. r=.73 B (SEM)=.75  3. r=.75 B (SEM)=.60  4. r=.77  5. r=.77  6. r=.86	no serious limitations	D

			<p>9. TLB and TE jointly mediate the relationship between TPS and TEF.</p> <p>Thus, results indicate that psychological safety is the 'engine' of performance, not the 'fuel'.</p>			
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46. Koopman, 2016	time-lagged survey  n=567 (115 teams)	employees working in R&D teams for a major IT company in China	<p>1a: 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.</p> <p>1b: 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.</p> <p>2a: Team psychological safety climate is positively associated with average team member creative performance.</p> <p>2b Team psychological safety climate is NOT positively associated with average team member task performance.</p> <p>3a: The curvilinear relationship between team tenure and average team member creative performance is partially mediated by team psychological safety climate.</p> <p>3b: The curvilinear relationship between team tenure and average team member task performance is NOT partially mediated by team psychological safety climate.</p> <p>4a: The positive relationship between team psychological safety climate and average team member creative performance is NOT moderated by team psychological safety climate strength.</p> <p>4b: 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.</p> <p>5a: The indirect curvilinear relationship between team tenure and average team member creative performance through team psychological safety climate is NOT moderated by team psychological safety climate strength, such that when team</p>	<p>1a, 1b, 2a &amp; 4b: unclear, <math>\gamma</math> are reported</p> <p>3a: small effect size, <math>\kappa^2=.01</math></p> <p>5b: unclear</p>	no serious limitation	D+
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			<p>psychological safety climate strength is high (vs low), the positive relationship is stronger.</p> <p>5b: The indirect curvilinear relationship between team tenure 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.</p>			
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47. Kuo, 2019	uncontrolled study with a pretest  n=207 (39 groups)	employees from 12 public fitness centres in Taiwan	1: The positive relationship between employees' proactive personality and changes in job satisfaction is moderated by psychological safety, such that the relationship between a proactive personality and changes in job satisfaction will be stronger when the psychological safety is low.	unclear, $\gamma$ are reported	no serious limitation	C
48. Lee, 2016	cross-sectional study  n=649	nurses in 40 large hospitals in Taiwan	<p>1: Psychological safety has a positive effect on a person's intention to report incidents that person was involved (ITS).</p> <p>2: Psychological safety has a positive effect on a person's intention to report incidents that person only has observed (ITO).</p> <p>3: Psychological safety does NOT have a positive effect on attitude toward incident-reporting behaviour.</p> <p>4: Psychological safety has a positive effect on the subjective norms (SNs) of incident reporting.</p> <p>5: Psychological safety has a positive effect on the perceived benefits (PBs) of reporting incidents.</p>	<p>1: <math>B=.31</math></p> <p>2: <math>B=.18</math></p> <p>3: <math>B=.18</math></p> <p>4: <math>B=.35</math></p>	no serious limitation	D



49. Li, 2014	time-lagged survey  n=283 supervisor- subordinate dyads (283 subordinates and 112 supervisors)	six electronic companies located in a major city of north China	<p>1: Perceptions of organisational politics (POP) is negatively related to psychological safety (PS).</p> <p>2: Psychological safety mediates the relationship between POP and voice behaviour (VB).</p> <p>3: 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>4: 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>1: <math>B = -.20</math></p> <p>2: POP&amp;VB: <math>B = -.21</math> PS&amp;VB: <math>B = .37</math> POP&amp;VB&amp;PS: <math>B = -.11</math>, n.s.</p> <p>3: POPxPIS&amp;PS: <math>B = .14</math> POPxPIS&amp;VB: <math>B = .16</math></p> <p>POP&amp;PS: PIS low: <math>r = -.34</math> PIS high: <math>r = -.06</math></p> <p>POP&amp;VB PIS low: <math>r = -.37</math> PIS high: <math>r = -.05</math></p> <p>4: unclear</p>	no serious limitation	D+
50. Liu, 2015	time-lagged survey  n=718	large telecom corporatio n in south China	1: Employees' perceptions of team psychological safety mediate the relationship between authentic leadership and internal whistleblowing.	<p><math>B = 0.24</math></p> <p><math>B = 0.21</math></p>	no serious limitation	D+

51. Liu, 2016	time-lagged survey  n=423	a company operating in a large state- owned enterprise in the city of Changsha in China	<p>1: Abusive supervision is negatively related to psychological safety.</p> <p>2: Psychological safety mediates the effect of abusive supervision on organisation identification.</p> <p>3: Psychological safety is NOT positively related to employee creativity.</p> <p>4: Organisational identification mediates the effect of psychological safety on employee creativity.</p> <p>5: The effect of abusive supervision on creativity is mediated by psychological safety.</p>	1: $r=-.35$	no serious limitation	D+
52 Liu, 2018	cross- sectional study  n=107 matching pairs of employees and supervisors	a large health organisatio n with over 500 employees, southern USA	<p>1: Authentic leadership is positively related to subordinates' perceptions of their psychological safety.</p> <p>2: The positive relationship between authentic leadership and subordinates' proactive behaviour is mediated by psychological safety.</p> <p>3: The negative relationship between authentic leadership and subordinates' workplace deviance behaviour is mediated by psychological safety.</p>	1: $r=.46$	no serious limitation	D

53. Liu, 2020	cross-sectional study  n=716	employees from 11 enterprises across six industries in China	<p>1. Employees' trust in the organisation's safety management practices* (ETSM) predicts their (a) prosocial safety behaviour (SBB**) and (b) their proactive safety behaviour (SAB***).</p> <p>2. Psychological safety (PS) mediates the relationship between (a) ETSM and their (b) SBB and (c) SAB.</p> <p>3. Psychological safety exhibits a positive effect on employees' sense of belonging.</p> <p>*Employees' trust in organisational safety refers to employees' belief, confidence and supportive attitude towards the organisation's safety activities (policies, management activities and facilities). The study distinguishes three dimensions: trust in the organisation's safety institutions, safety equipment and safety management practice (also referred to as ETSM: employees' belief that their supervisors and managers can conduct reasonable and appropriate management practices based on the organisation's policies and procedures).</p> <p>**Prosocial safety behaviour (SSB) refers to employees' effort to help and cooperate with co-workers to complete a task and to protect them from dangerous situations or injuries.</p> <p>***Proactive safety behaviour (SAB) provides a safety voice to organisations and includes employees' effort to raise safety issues and encourage co-workers to discuss and propose innovative suggestions to reform the workplace environment.</p>	<p>1a. <math>r=.55</math> B (SEM)=.38</p> <p>1b. <math>r=.54</math> B (SEM)=.42</p> <p>2a. <math>r=.59</math> 2b. <math>r=.44</math> 2c. <math>r=.50</math></p> <p>3. <math>r=.50</math> B (SEM)=.37</p>	no serious limitations	D
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54. Malhotra, 2017	cross-sectional study  n=149 teams	US, various	<p>1: 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.</p> <p>2: 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.</p> <p>3: 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.</p>	not clear whether the reported coefficients are standardised	no serious limitation	D
55. Malik, 2018	cross-sectional study  n=233	employees of top 5 banks of Pakistan	<p>1: Psychological safety is positively related to internal whistleblowing.</p> <p>2: Ethical leadership is positively related to psychological safety.</p> <p>3: Psychological safety mediates the relationship between ethical leadership and internal whistleblowing.</p>	<p>1: <math>r=.36</math></p> <p>2: <math>r=.30</math></p> <p>3: Unclear</p>	procedure of data collection could have been described in more detail; data analysis could be more clear	D-
56. Matteo, 2016	cross-sectional study  n=195	physicians, psychologists, physiotherapists, nurses and other healthcare operators from three Italian H&PCOs (hospice and	<p>1: Employees' perception of psychological safety positively does NOT affect their innovative work behaviour (IWB).</p> <p>2: (partially supported): Employees' perception of psychological safety positively affects their knowledge-sharing behaviour.</p> <p>3: Employees' perception of structural social capital positively affects their perception of psychological safety.</p> <p>4: Employees' perception of relational social capital positively affects their perception of psychological safety.</p>	<p>2: PS&amp; seeking feedbacks: <math>\beta=.28</math> PS&amp; sharing mistakes: <math>\beta=.38</math> PS&amp; sharing of best practices: not supported</p> <p>3: <math>\beta=.19</math></p> <p>4: <math>\beta=.57</math></p>	the origin of the items used to measure psychological safety could be clearer	D

		palliative care organisations)				
57. Mayfield, 2016	cross-sectional study n=260 (58 teams)	graduate and upper-division undergraduate students enrolled in business and education courses in a large southern central US university	1: 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.	unclear	no serious limitation	D
58. Moore, 2017	cross-sectional study n=200	mentored executives and entrepreneurs from 14 countries	1: 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.	unclear	the procedure of data collection could be clearer	D
59. Nellen, 2020	meta-analysis k=19	teams of professionals across manufacturing, product	1. There is a positive relationship between psychological safety and team learning (k=19). 2. There is a positive relationship between psychological safety and top-level leadership (k=9).	1. $\rho=.60$ 95% PI [.13, .85] 2. $\rho=.38$ 95% PI [-.52, .88]	design of included studies unclear methodological quality of	C

		development, academic research and teaching, healthcare, and professional services	<p>3. There is a positive relationship between psychological safety and culture/climate (k=7).</p> <p>4. There is a positive relationship between psychological safety and job resources (k=8).</p> <p>5. There is a positive relationship between psychological safety and organisational infrastructure (k=3).</p>	<p>3. <math>\rho=.35</math> 95% PI [.12, .55]</p> <p>4. <math>\rho=.40</math> 95% PI [.04, .66]</p> <p>5. <math>\rho=.59</math> 95% PI [-.88, .93]</p>	<p>included studies not assessed</p> <p>Finding 2 and 5: wide prediction intervals</p>	
60. Plomp, 2019	cross-sectional study n=527 (temporary agency workers) n=796 (permanent employees)	temporary agency workers and permanent workers, various organisational industries (corporate and financial services, healthcare and social services, and government institutions, transport, production), Netherlands	<p>1: For permanent employees, psychological safety is positively related to (a) increasing structural job resources, (b) increasing social job resources, (c) increasing challenging job demands, and (d) decreasing hindering job demands.</p> <p>2: For temporary employees, psychological safety is positively related to (a) increasing structural job resources, (b) increasing social job resources, (c) increasing challenging job demands, and (d) decreasing hindering job demands.</p> <p>3: For permanent employees, psychological safety is positively related to perceived external employability through (a) increasing structural job resources, (b) increasing social job resources, and (c) increasing challenging job demands. Additionally, psychological safety is positively related to (d) decreasing hindering job demands, which is in turn negatively related to perceived external employability.</p> <p>4: For temporary employees, psychological safety is positively related to perceived external employability through (a) increasing structural job resources. Additionally, psychological safety is positively related to (b) decreasing hindering job demands, which is in turn negatively related to perceived external employability.</p>	<p>1a: <math>B=0.26</math></p> <p>1b: <math>B=0.19</math></p> <p>1c: <math>B=0.16</math></p> <p>1d: <math>B=-0.19</math> ns</p> <p>2a: <math>B=0.13</math> ns</p> <p>2b: <math>B = - 0.08</math> ns</p> <p>2c: <math>B=0.24</math></p> <p>2d: <math>B = - 0.15</math></p> <p>3a: unclear</p> <p>3b,c,d: ns</p> <p>4a,b: ns</p>	no serious limitation	D

61. Rao, 2018	cross-sectional study n=282	service executives across Indian organisations	1: Empowering leadership is positively related to psychological safety. 2: Psychological safety positively related to constructive voice. 3: Psychological safety mediates the association between empowering leadership and constructive voice.	1: $r = .63$ 95 CI=(.56, .81) 2: $r = .60$ 95 CI=(.09, .32) 3: partially	no serious limitations	D
62. Schaubroeck, 2011	cross-sectional study n=191	financial services teams in Hong Kong and the US	1: Affect-based trust in the leader is positively related to team performance through the mediating influence of team psychological safety. 2: 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.	ZO correlations: psyc safety > performance: $r = .44$ servant leadership > psyc safety: $r = .37$ (only SEM coefficients are provided)	no serious limitations	D
63. Scheepers, 2018	cross-sectional study n=105	Dutch physicians	Physicians who experienced more psychological safety were more likely to receive corrective and positive performance feedback from peers, explanations of feedback and suggestions for improvement.	only unstandardised regression coefficient are reported	no serious limitations	D
64. Sherf, 2021	S1: meta-analysis s=162 S2: longitudinal (6 months) panel study n=405 (62)	S1: various S2: US-based employees recruited through M-Turk	1. When controlling for the effect of perceived impact, psychological safety is more strongly related to (a) employee silence than to (b) employee voice. Employee silence: the conscious withholding of information, suggestions, ideas, questions or concerns about potentially important work- or organisation-related issues from persons who might be able to take action to address those issues Employee voice: the discretionary communication of ideas, suggestions, concerns or opinions about work-related issues with the intent to improve organisational or unit functioning.	S1: 1a. $B = -.44$ 95% CI [2.46, 2.42] $R^2 = .85$ 1b. $B = .14$ 95%CI [.11, .16] $R^2 = .28$ S2: 1a. $r = -.17$	no serious limitations	B

				R <sup>2</sup> =.41 1b. r=.11 R <sup>2</sup> =.38		
65. Shumski, 2018	longitudinal study n=80	employees from a constructio n materials company in the southeast US	1. Surface acting in meetings is negatively related to perceptions of meeting psychological safety.  2. Job level moderates the negative relationships between surface acting during workplace meetings and perceptions of meeting psychological safety such that the negative relationship is stronger for those who surface act with a higher job level as compared with those who surface act with a lower job level.  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.	ZO corelations surf act - psyc safety: r=.33  only unstandardised betas are reported	high non- response and dropout	C
66. Spoelma, 2017	two RCTs n=376 (184 teams)	undergradu ate students at a large public US university	1: The interactive effects of activated identity faultiness and threat on team creativity will be partially mediated by team psychological safety.	small to medium?	sloppy reporting of effect sizes	A
67. Subhakar an, 2018	cross- sectional study n=575	employees from technology firms in India	1. Psychological safety mediates the relationship between the co-workers' upward voice and employee upward voice.  2. Psychological safety mediates the relationship between manager pro-voice behaviour and employee upward voice.	ZO corr: psyc safety - c-workers upw voice: .45 mgr pr-voice beh: .59 empl upw voice: .54  only SEM coeff are reported	no serious limitations	D



68. Torralba, 2016	cross-sectional study n=13,044	resident physicians at Veterans Affairs medical centres (in the US)	1. Psychological safety appears to be an important factor in resident satisfaction across 4 domains that evaluators of graduate medical education programmes should consider when assessing clinical learning experiences.	OR=5.7 95% CI 5.4-6  respondents who reported 1 higher level of PS are 5.7 times more likely to report a higher level of satisfaction for their clinical learning environment	no serious limitations	D
69. Triplett, 2018	cross-sectional study n=131	adult workers employed in organisations within western Australia	1. External work locus of control (WLOC) is negatively associated with psychological safety.  2. Trust moderates the relationship between WLOC and psychological safety such that higher trust levels as opposed to lower trust levels will increase the positive relationship between internal WLOC and psychological safety.	1: $r = -.46$	results insufficiently differentiate between internal and external WLOC	D-
70. Unler, 2019	cross-sectional study n=286	employees working in the telecommunication industry in Istanbul	1: 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).  2: 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): 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	1; small to moderate rs and betas  2: $R^2 = .0.4$ , $B = .65$	no serious limitations	D

			changes have merit. Destructive voice (DESV): includes the voluntary expression of hurting the company by communicating hurtful or critical ideas related to the policies or procedures (ie bad-mouthing the organisation's policies or objectives).			
71. Walters, 2016	cross-sectional study  n=140	unclear (M-Turk)	1: 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.	1: r=.64	uses Baron and Kenny to test for moderation  sample unclear	D-
72. Wang, 2019	cross-sectional study  n=173	hotel employees in Hong Kong	1. Error management culture is positively related to psychological safety.  2. Psychological safety is positively related to organisational commitment.	unclear	small sample, results unclear	D-
73. Yanchus, 2015	cross-sectional study  n=11,726	psychiatrists, psychologists, social workers, and mental health nurses in the Veterans Health Administration	Psychological safety directly predicted turnover intention. There were no differences in the predictors across occupations.	large	psychological safety was measured with only one item.	D

74. Yoon, 2017	longitudinal study  n=1,790	managers and employees from small and medium enterprises	Psychological safety moderates the (curvilinear) relationship between entrepreneurial orientation and firm performance.	$\beta=.54$	no serious limitations	C
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### Data extraction table - psychological safety/healthcare studies

Author & year	Design & sample size	Sector/population	Main findings	Effect sizes	Limitations	Level
1. Brimhall, 2023	cross-sectional survey  n=373	employees from 85 hospital departments in a non- profit healthcare system in the US	<p>1. Psychological safety (PS) is associated with reported medical errors.</p> <p>2. Leadership for self-worth* (LSW) is positively associated with PS.</p> <p>3. Inclusion and trust mediates the association between LSW and PS.</p> <p>4. Inclusion, trust and PS mediates the association between LSW and reported medical errors.</p> <p>*Leadership for self-worth: the leader's ability to (a) understand their employees' emotions and needs (fostering inclusion); (b) express confidence in their employees' ability to perform their job (building trust); and (c) support employees' ideas, suggestions and actions.</p>	<p>1. <math>r=-.30</math></p> <p>2. <math>r=.55</math></p> <p>reported betas are unclear</p>	no serious limitations	D

2. Clark, 2014	cross-sectional survey  n=94 matched dyads	nursing professionals employed at two hospitals in the midwestern US	1. Psychological safety climate is positively associated with peer-rated organisational citizenship behaviour (OCB) among hospital nurses.  2. The association between psychological safety climate and OCB is stronger for (a) nurses with narrow role definition compared with (b) nurses with broad role definition.	1. $r=.34$ 2a. $\beta=.52$ $R^2=.26$ 2b. $\beta=.03$ ns	no serious limitations	D
3. Fu, 2022	cross-sectional survey  n=366	employees from six hospitals in Pakistan	1. Inclusive leadership is positively associated with employee creativity.  2. Inclusive leadership has a direct impact on psychological safety perceptions of employees.  3. Psychological safety mediates between inclusive leadership and employee creativity.	1. $r=.49$ $\beta$ (SEM)=.48 2. $r=.42$ $\beta$ (SEM)=.42	no serious limitations	D
4. Han, 2020	cross-sectional survey  n=200	nurses working in hospitals located in metropolitan areas of South Korea	1. Psychological safety is a significant factor affecting nurses' patient safety competency*.  *The knowledge, skills and attitudes associated with patient safety.	1. $\beta=.16$	no serious limitations	D
5. Lavelle, 2022	cross-sectional survey  n=106	healthcare staff working within diverse hospital areas in a central London hospital	1. Psychological safety predicts team performance.  2. Psychological safety moderates the relationship between transactive memory system and team performance.	1. $r=.34$ $R^2=.20$  only unstandardised betas are reported	performance measures are self-report	D

6. Lee, 2021	cross-sectional survey  n=526	nurses from the medical/surgical units of three tertiary general hospitals located in two cities in South Korea	<p>1. Nurses' psychological safety is positively related to (a) speaking up and (b) error reporting intention and negatively related to (c) withholding voice.</p> <p>2. Inclusive leadership is positively related to (a) psychological safety, (b) speaking up, (c) error reporting intention and negatively related to (d) withholding voice.</p> <p>3. Psychological safety mediates the positive relationship between inclusive leadership and (a) speaking up and (b) withholding voice.</p>	<p>1a. <math>r=.52</math> 1b. <math>r=.23</math> 1c. <math>r=-.26</math></p> <p>2a. <math>r=.53</math> 2b. <math>r=.50</math> 2c. <math>r=.23</math> 2d. <math>r=-.21</math></p>	no serious limitations	D
7. Ma, 2021	cross-sectional survey  n=443	nurses working in Pakistan's five public sector hospitals	<p>1. Servant leadership is negatively related to nurses' burnout.</p> <p>2. Servant leadership is positively related to nurses' psychological safety.</p> <p>3. Psychological safety is negatively related to nurses' burnout.</p> <p>4. Psychological safety mediates the relationship between servant leadership and nurses' burnout.</p>	<p>1. <math>r=-.60</math> B (SEM)=-.32</p> <p>2. <math>r=.58</math> B (SEM)=.33</p> <p>3 <math>r=-.75</math> B (SEM)=-.34</p> <p>servant leadership + psychological safety &gt; burnout <math>R^2=.63</math></p>	no serious limitations	D
8. Mitterer, 2023	cross-sectional survey  n=283	staff nurses and nurse managers, employed at a Magnet certified, Level II trauma centre located in Pennsylvania, US	<p>1. Trust positively mediates the relationship between psychological safety and job satisfaction (indicating that psychological safety precedes trust).</p>	<p>trust - psyc safety <math>r=.77</math></p> <p>trust - job sat <math>r=.49</math></p> <p>psyc. safety - job sat <math>r=.43</math></p>	Barron and Kenny was used for mediation analysis	D

				only unstandardised betas are reported		
9. Nixon, 2015	cross-sectional survey n=326	nurses in the USA recruited through listservs	<p>1. Psychological safety climate is negatively related to (a) job-related negative affect (JRNA), (b) turnover intentions, (c) safety workarounds, and (d) workplace hazards.</p> <p>2. JRNA mediates the relationship between psychological safety climate, turnover intentions, safety workarounds and workplace hazards.</p>	<p>1a. <math>r=-.36</math>  1b. <math>r=-.41</math>  1c. <math>r=-.13</math>  1d. <math>r=-.17^*</math></p>	<p>sample and response rate somewhat unclear</p> <p>hazards and injuries measures are self-report</p>	D
10. O'Donovan, 2020-1	systematic review s=14	interventions conducted in a healthcare setting	<p>1. Interventions fell into five categories. Educational interventions used simulation, video presentations, case studies and workshops, while interventions which did not include an educational component used holistic facilitation, forum play and action research meetings.</p> <p>2. Mixed results were found for the efficacy or effectiveness of these interventions. While some interventions showed improvement in outcomes related to psychological safety, speaking up and voice, this was not consistently demonstrated across interventions.</p> <p>3. Included interventions' ability to demonstrate improvements in these outcomes were limited by a lack of objective outcome measures and the ability of educational interventions alone to change deeply rooted speaking-up behaviours.</p>	not reported	<p>given the limited number of interventions targeting psychological safety, the inclusion criteria were widened to include interventions targeting speaking up and voice behaviour</p>	A

11. Ortega, 2014	cross-sectional survey  n=698 (107 teams)	nursing teams from different hospital areas (including primary care, surgery and intensive care) at 37 public hospitals throughout Spain	<p>1. Change-oriented leadership is positively related to team learning behaviour in healthcare teams.</p> <p>2. Psychological safety (PS) mediates the relationship between change-oriented leadership (CL) and team learning (TL) behaviour in healthcare teams.</p> <p>3. Change-oriented leadership is positively related to team performance in healthcare teams.</p> <p>4. Psychological safety (and team learning behaviour) mediates the relationship between change-oriented leadership and team performance (TP) in healthcare teams</p>	<p>1. <math>r=.56</math> <math>B (SEM)=.37</math></p> <p>2. CL - PS: <math>r=.51</math> <math>B (SEM)=.52</math></p> <p>PS - TL: <math>r=.56</math> <math>B=.57</math></p> <p>3. <math>r=.32</math> <math>B (SEM)=.23</math></p> <p>4. PS - TP: <math>r=.26</math></p> <p>(all ES are controlled for team size, as this is negatively correlated with team learning, <math>r=-.20</math>)</p>	Baron and Kenny was used for mediation analysis	D
12. Rathert, 2022	cross-sectional survey  n=631	clinical healthcare providers working in medical units of a large acute care hospital in the US	<p>1. Individuals who perceive a more caring work environment (CWE) experience less emotional exhaustion (EE).</p> <p>2a. Psychological safety (PS) mediates relations between CWE and EE, such that PS is positively related to CWE and negatively related to EE.</p> <p>2b. This effect is stronger for employees who experience low levels of empowerment (EMP).</p>	<p>1. <math>r=-.27</math></p> <p>2a. CWE - PS: <math>r=.49</math> PS - EE: <math>r=-.37</math></p> <p>2b. EMP - PS: <math>r=.42</math> EMP - EE: <math>r=-.33</math></p> <p>only unstandardised betas are reported</p>	no serious limitations	D

13. Scheepers , 2018	cross-sectional survey  n=105	medical specialists of a Dutch academic medical centre	1. Physicians experiencing higher levels of psychological safety are more likely to report to receive performance feedback from peers.	only unstandardised betas are reported	no serious limitations	D
14. Wang, 2021	cross-sectional survey  n=719 and 73	nurses and nurse managers at six private regional teaching hospitals in central Taiwan	1. There is a positive relationship between transformational leadership and nurses' job performance. 2. There is a positive relationship between transformational leadership and nurses' perception of psychological safety. 3. Nurses' perception of psychological safety is positively correlated with their job performance. 4. The relationship between transformational leadership and nurses' job performance is mediated by nurses' perception of psychological safety.	1. r=.23 2. r=.82 3. r=.24	no serious limitations	D
15. Yanchus, 2015	cross-sectional survey  n=11,726	psychiatrists, psychologists , social workers and mental health nurses in the US Veterans Health Administration	1. Psychological safety directly predicts turnover intention. 2. There are no differences across occupations.	1. r=-.44/-.47	no serious limitations	D



## Overview of excluded meta-analyses

Author & year	Reason for exclusion
1. Adams, 2020	Narrative literature review, no quantitative data or pooled findings are reported.
2. Applebaum, 2018	Doesn't examine predictors or outcomes of psychological safety.
3. Aranzamendez, 2015	Literature review.
4. Aufegger, 2019	Narrative review, no quantitative outcomes or effect sizes are reported.
5. Rown, 2016	Qualitative study.
6. Cave, 2016	Insufficient data reported, not quantitative study.
7. 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 wellbeing at work).
8. Dahl, 2017	Study protocol.
9. Edmondson, 2014	Narrative review, no quantitative outcomes or effect sizes are reported.
10. Espedido, 2021	Limited practical relevance/applicability, strong academic perspective: study examines whether psychological safety climate moderates the within-person effects of problem-solving demands on positive proactive behaviours via challenge appraisal > findings are indicative.
11. Geerts, 2021	Psychological safety is mentioned as a key factor in the development of self-managed team, but is not quantitatively measured.

12. Grailey, 2021	Systematic review, findings are mainly qualitative in nature.
13. Hu, 2021	All relevant psychological safety-related findings are non-significant.
14. 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.
15. 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.
16. Jimmieson, 2016	Not about psychological safety. Safety climate is operationalised 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".
17. 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".
18. Li, 2022	Limited generalisability, examines whether the relationship between psychological safety and affective commitment is mediated through job burnout (?). No standardised betas are provided.
19. Newman, 2017	Narrative review, no quantitative outcomes or effect sizes are reported.
20. Nielsen, 2016	Not about psychological safety. The Safety Climate Questionnaire (Zohar and Luria, 2005) was 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.
21. O'Donovan, 2020-2	Narrative review examining factors (antecedents?) that aims to identify factors that enable psychological safety in healthcare teams. Most of the factors come from qualitative studies (interviews, focus groups), no effect sizes are reported.
22. O'Neil, 2018	Narrative review, no quantitative outcomes or effect sizes are reported.
23. Osei, 2023	Examines the relationships between team burnout and team psychological safety and civility among hospital nurses. However, the study took place during the COVID-19 pandemic.

24. Probst, 2010	Not psychological safety. The measure of organisational safety climate included: management values (eg “Management places a strong emphasis on workplace health and safety”), safety communication (eg “There is open communication about safety issues within this workplace”), safety training (eg “Safety issues are given a high priority in training programs”), and safety systems (eg “There are systematic procedures in place for preventing breakdowns in workplace safety”).
25. Salas, 2018	Narrative (systematic) review, no quantitative outcomes or effect sizes are reported.
26. 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.
27. Wawersik, 2023	Narrative (systematic) review, no quantitative outcomes or effect sizes are reported.

## Appendix 4: Measure of psychological safety

The standard measure of team psychological safety comes from Edmondson (1999) and combines the following seven questionnaire items. For the original scale, response options are a 7-point scale from “very inaccurate” to “very accurate”.

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

In focusing on factors relating to psychological safety, Edmondson’s paper also presents other measures that may be of interest:

- *Supportiveness of organisation context* - example item: *This team gets all the information it needs to do our work and plan our schedule.*
- *Task design* - example item: *The work that this team does makes a difference for the people who receive or use it.*
- *Clear direction* - example item: *It is clear what this team is supposed to accomplish.*
- *Team composition* - example item: *Most people in this team have the ability to solve the problems that come up in our work.*
- *Team efficacy* - example item: *Achieving this team’s goals is well within our reach.*
- *Team leader coaching* - example item: *The team leader initiates meetings to discuss the team’s progress.*
- *Team learning behaviour* - example item: *We regularly take time to figure out ways to improve our team’s work processes.*
- *Internal motivation* - example item: *My opinion of myself goes up when I do my job well.*
- *Team performance* - example item: *Recently, this team seems to be ‘slipping’ a bit in its level of performance and accomplishments.*



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