

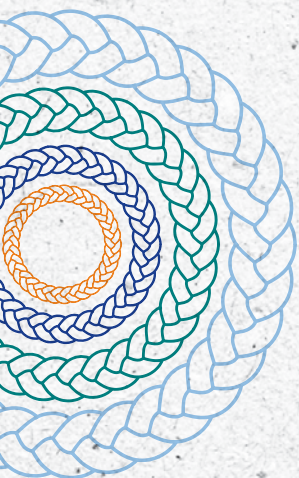
Rapid Evidence Assessment (REA)



FACTORS ASSOCIATED WITH KNOWLEDGE WORKER PERFORMANCE

a summary of research literature

July 2019



Culture Review **Implementation**
our journey of positive change



ACT
Government

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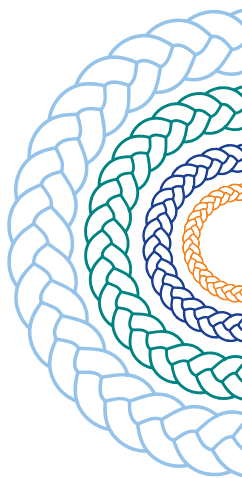
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Background

In 2013, a group of eight companies sought to understand what academic research has discovered about the determinants of knowledge worker performance. For each company the pay-off for enhancing knowledge worker performance would be huge, not only in terms of finance, but also in terms of innovation, which for some participants is a key success factor for long term profitability and growth. Although all organisations used various measures and controls to monitor and enhance performance, they lacked a basic understanding of what really drives knowledge worker performance.

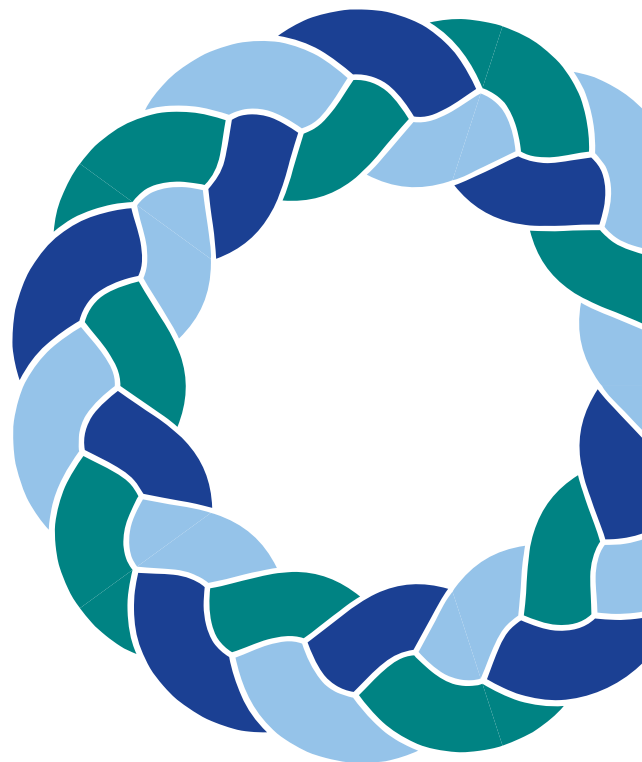
For this reason the organisations commissioned the Center for Evidence-Based Management (CEBMA) to conduct a Rapid Evidence Assessment (REA) of the scientific literature on factors associated with knowledge worker productivity. In July 2019, the REA was updated. This update was funded by Novartis and Advanced Workplace Associates (AWA).

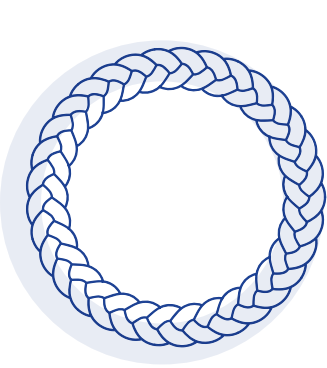


What is a Rapid Evidence Assessment (REA)?

Evidence reviews come in many forms. One of the best-known types is the conventional literature review, which provides an overview of the relevant scientific literature published on a topic. However, a conventional literature review's trustworthiness is often low: clear criteria for inclusion is often lacking and studies are selected based on the researcher's individual preferences. As a result conventional literature reviews are prone to severe bias. This is why 'rapid evidence assessments' (REAs) are being used.

This type of review is a specific research methodology that aims 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, a REA is transparent, verifiable, and reproducible, and, as a result, the likelihood of bias is considerably smaller.



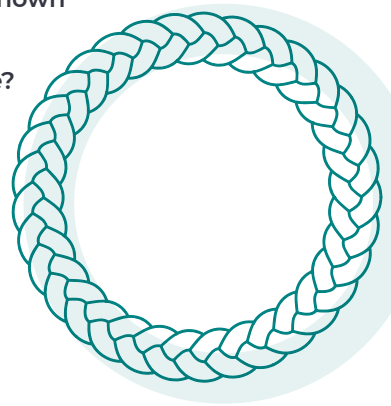


Main question: What does this REA answer?

What is known in the scientific literature about factors associated with knowledge worker performance?

Supplementary questions:

1. **What is 'knowledge work'?**
2. **Which of the factors that have an impact on the performance of knowledge workers are most widely studied and what is known of their effect?**
3. **Which six factors have the biggest impact on performance?**
4. **How do these six actors enhance the performance of knowledge workers and how can they be measured?**

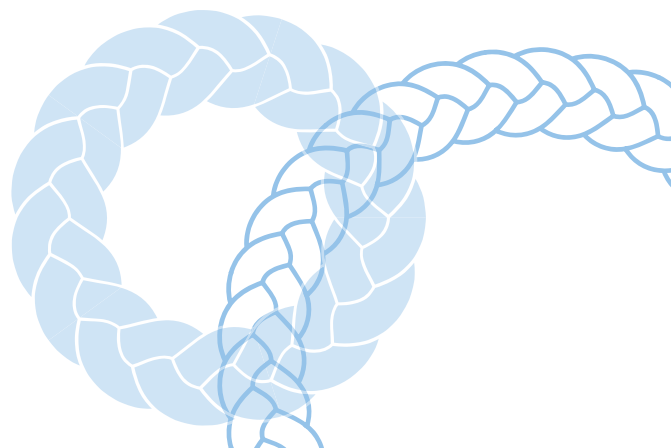


Search strategy: How was the research evidence sought?

The following three databases were used to identify studies: ABI/INFORM Global from ProQuest, Business Source Premier from EBSCO and PsycINFO from Ovid. The following generic search filters were applied to all databases during the search:

1. **Scholarly journals, peer-reviewed.**
2. **Published in the period 1980 to 2019.**
3. **Articles in English.**

A search was conducted using combinations of different search terms, such as 'productivity', 'performance', 'knowledge work' and 'knowledge based business'. We conducted six different search queries, which yielded a total of more than 600 studies. All queries, criteria and search results are described in detail in Appendix I.



Selection process: How were the studies selected?

Study selection took place in two phases. First, the titles and abstracts of the 600+ studies were screened for their relevance to this REA. In case of doubt, lack of information, or disagreement, the study was included. Duplicate publications were removed. This first phase yielded 52 (2013) and 66 (2019) studies.

Secondly, studies were selected based on the full text of the article according to the following inclusion criteria.

1. Only meta-analyses.
2. Only studies in which the association with (knowledge worker) performance are measured.
3. Only studies related to workplace settings.
4. Only studies that were graded Level C or above (see below).

Two reviewers worked independently to identify which studies were included. Where the reviewers disagreed on inclusion, a third reviewer assessed whether the study was appropriate for inclusion with no prior knowledge of the initial reviewers' assessments.

The decision of the third reviewer was final. This second phase yielded 35 (2013) and 44 (2019) meta-analyses, making a total of 79 meta-analyses. An overview of the selection procedure is provided in Appendix II





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

Methodological Appropriateness

In almost any situation it is possible to find a scientific study to support or refute a theory or a claim, and sometimes to quite a large degree. It is therefore important to determine which studies are trustworthy (i.e. 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 (i.e. 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 & Zechmeister, 2006).

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 came 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 sit lower down 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 following four levels of appropriateness were used for the classification:

Design	Level
Systematic review or meta-analysis of randomised controlled studies.	AA
Systematic review or meta-analysis of controlled and/or before-after studies.	A
Randomised controlled study.	
Systematic review or meta-analysis of cross-sectional studies.	B
Non randomised controlled before-after study.	
Interrupted time series.	
Controlled studies without a pretest or uncontrolled study with a pretest.	C
Cross-sectional studies.	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 (organisational culture) and its outcomes (performance), which is the purpose of this review.

Methodological Quality

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 was determined as follows: a downgrade of one level if two weaknesses were identified; a downgrade of two levels if four weaknesses were identified, etc.

Effect sizes

Finally, the effect sizes were identified. An effect (e.g. a correlation, Cohen's d or ω) 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.

Outcome of the critical appraisal

The overall quality of the studies included in this review is moderate to high. Most of the meta-analyses were based on cross-sectional studies, and were therefore qualified as Level C. Twelve meta-analyses were graded Level B or higher. An overview of all studies included is provided in Appendix III.



Main findings

1. What is knowledge work?

The term 'knowledge work' was coined in 1959 by Peter Drucker to describe work that occurs primarily because of mental processes rather than physical labor (Drucker, 1959). In the past century, the proportion of the workforce engaged in knowledge work has increased dramatically, as organisations have moved from manual production to more knowledge-driven production as these estimates suggest:

1920: 30% (Davenport et al., 2002)

1956: 50% (Naisbitt, 1982)

1980: 70% (Thomas & Baron, 1994)

Since then many definitions have been put forward and there are nearly as many definitions of both 'knowledge work' and 'knowledge workers' as there are publications on the topic. When examined closely most definitions seem to have the following common elements:

- » Distribution or application of knowledge.
- » Highly educated, autonomous professionals.
- » Use of information technology as an integral part of the work process.
- » A work process that is difficult to standardise.
- » Complex and intangible outcomes.

Most studies acknowledge that the difference between manual work and knowledge work is a continuum. In addition, even the highest level of knowledge work includes mundane tasks such as storing information, returning telephone calls, and composing and responding to emails (Heerwagen et al, 2004). To assess the level of knowledge work different aspects of the job should be examined such as¹:

- » Autonomy (the degree of worker control over how a task is done).
- » Structure (the degree of established rules, policies, or procedures about how a task is done).
- » Knowledge (the degree to which having previous knowledge and executing cognitive processes are part of the task).
- » Complexity (the degree to which a task offers difficulty in understanding or has confusing interrelated sub-tasks).
- » Routine and repetitiveness (the degree to which a task is part of a regular or established procedure characterised by habitual or mechanical performance of tasks).
- » Physical effort (the degree to which a task requires body strength, coordination, and skill in order to be performed).

¹Adapted from: Ramirez, Y.W. (2006), Defining Measures for the Intensity of Knowledge Work in Tasks and Workers, Department of Industrial Engineering, University of Wisconsin-Madison, Madison, WI.



2. Which of the factors that have an impact on the performance of knowledge workers are most widely studied and what is known of their effect?

A total of 85 factors were identified, accounting for more than 145 effect sizes. An overview of all factors and effect sizes is provided in Appendix III.

Based on the analysis of the 66 included studies we can assume that, with regard to the performance of knowledge workers, the factors presented in the table below are the factors that demonstrated a large effect size (i.e. greater than $P = 0.40$).

Factor	Nr of studies	Level of evidence	Mean correlation weighed by sample size
Social cohesion	40+	C	.49* / .70**
Perceived supervisory support	9	C	.53*
Perceived support for innovation	10	C	.58*
Vision / goal clarity	17	C	.49*
External communication	7	C	.48*
Information sharing	50+	AA	.51*
Team empowerment	20+	C	.43* / .60**
Psychological safety	100+	B	.43*
Group goals	40+	AA	d = .8 / 1.2

* objective vs **subjective (self-rated) performance.

3. How do these factors enhance the performance of knowledge workers and how can they be measured?

Factor 1: Social Cohesion

Social cohesion refers to a shared liking or attraction to the group, emotional bonds of friendship, caring and closeness among group members, and enjoyment of each other's company (Chiochio, 2009). Social cohesion is not a stable trait; it can (and most likely does) change over time in both its form and intensity throughout the processes of group formation, group development, group maintenance, and group dissolution (Carron & Chelladurai, 1981). Although social cohesion is dynamic it is unlikely to change dramatically on a moment-to-moment basis.

How does Social Cohesion enhance performance?

A high level of social cohesion among team members creates a psychologically safe environment in which team members feel free to explore new ways of doing things (Hülsheger, Anderson, & Salgado, 2009). The notion that a person is more willing to take risk in a situation in which they have a reliable bond with an important other has been confirmed in other areas of psychology, such as developmental psychology (e.g. child development theories suggests that children who are well bonded with their parents engage in more exploratory and learning behaviour).

Furthermore, knowledge workers who have strong feelings of belongingness and attachment to their colleagues are more likely to cooperate and interact with each other, and thus more likely to exchange ideas and share information (Hülsheger et al., 2009). For example, operating room nurses are more likely to share innovative ideas to improve patient safety with surgeons when there is a high level of social cohesion between these two professional groups.

How can Social Cohesion be measured?

The level of social cohesion can be measured with the five questions adapted from the Group Cohesion Questionnaire (GCQ, Carless & De Paola 2000) that are listed in Appendix IV.

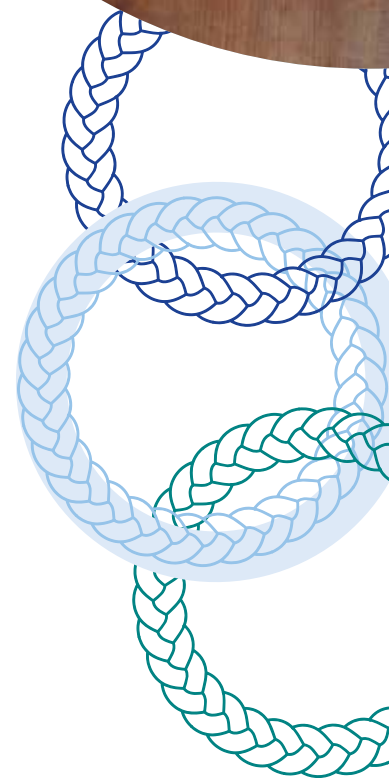
Factor 2: Perceived Supervisory Support

When knowledge workers interact with and receive feedback from their manager (supervisor), they form perceptions of how the manager supports them. This perception is based on how the workers feel the manager helps in times of need, praises the workers or the team for a task well done or recognises them for extra effort. This is known as perceived supervisory support (PSS). A related construct is 'support for innovation', which refers to the expectation, approval and practical support of a worker's attempt to introduce new ways of doing things.

Why does strong Supervisory Support enhance performance?

The construct of perceived supervisory support stems from the norm of reciprocity, which states that people treat others as they would like to be treated, repaying kindness with kindness and retaliating against those who inflict harm (Brunell et al., 2013; Gouldner, 1960). Put differently, when a manager helps his or her employees well in times of need or recognises them for extra effort, the employees will feel inclined to act in a way that is of value to the manager (such as meeting goals and objectives) and thus the organisation as a whole (Edmondson & Boyer, 2013; Eisenberger, Huntington, Hutchison, & Sowa, 1986).

The same applies to the construct of support for innovation: if workers experience approval and practical support for new ways of doing things, they are more likely to experiment and try out innovative solutions (Hülsheger, 2009).





Factor 3: Information Sharing

Information sharing (IS) refers to the extent to which teams are utilising the individual members' distinctive knowledge or expertise for the team's benefit. Especially if complex problems have to be addressed, IS is indispensable in that it allows team members to share their knowledge and past experiences and exchange and discuss ideas, which is particularly important for the generation of new ideas (Hülsheger et al., 2009).

Transactive Memory System

An important concept related to IS is that of Transactive Memory System (TMS). The concept was originally developed through the observation of dating couples. Researchers noticed that dating couples in a close relationship treat their partners as an external memory device. TMS within a team refers to a form of knowledge that is embedded in a team's collective memory. This collective memory works like an indexing system that tells members who knows what.

How does Information Sharing enhance performance?

It is believed that the more team members share information, the better the group decisions will be, and as a result the better overall group performance (Hackman, 1990). In addition IS is believed to increase the awareness of who knows what in the group (TMS). A well-developed TMS is thought to improve team performance because it gives members quick and coordinated access to one another's specialised expertise, enabling them to effectively combine knowledge to solve complex problems (Hsu, Shih, Chiang, & Liu, 2012).

How can Information Sharing and Transactive Memory System be measured?

The level of IS and TMS can be measured with the five questions adapted from questionnaires by Bock et al (2005), Yeung Choi (2010), Lewis (2003) and Bunderson (2002) that are listed in Appendix IV.

Factor 4: Vision and Goal Clarity

The notion of vision refers to an idea of a valued outcome which represents a higher order goal and motivating force at work (Kouzes & Pozner, 1987; West, 1990). Several studies have demonstrated that a clear vision at the team level tends to have a positive effect on the performance of individual teams as well. In this sense the notion of 'vision' refers to the extent to which knowledge workers have a common understanding of objectives and display high commitment to those team goals. For this reason 'vision' at the team level is also referred to as 'goal clarity'.

Why does a clear Vision and Goal Clarity enhance performance?

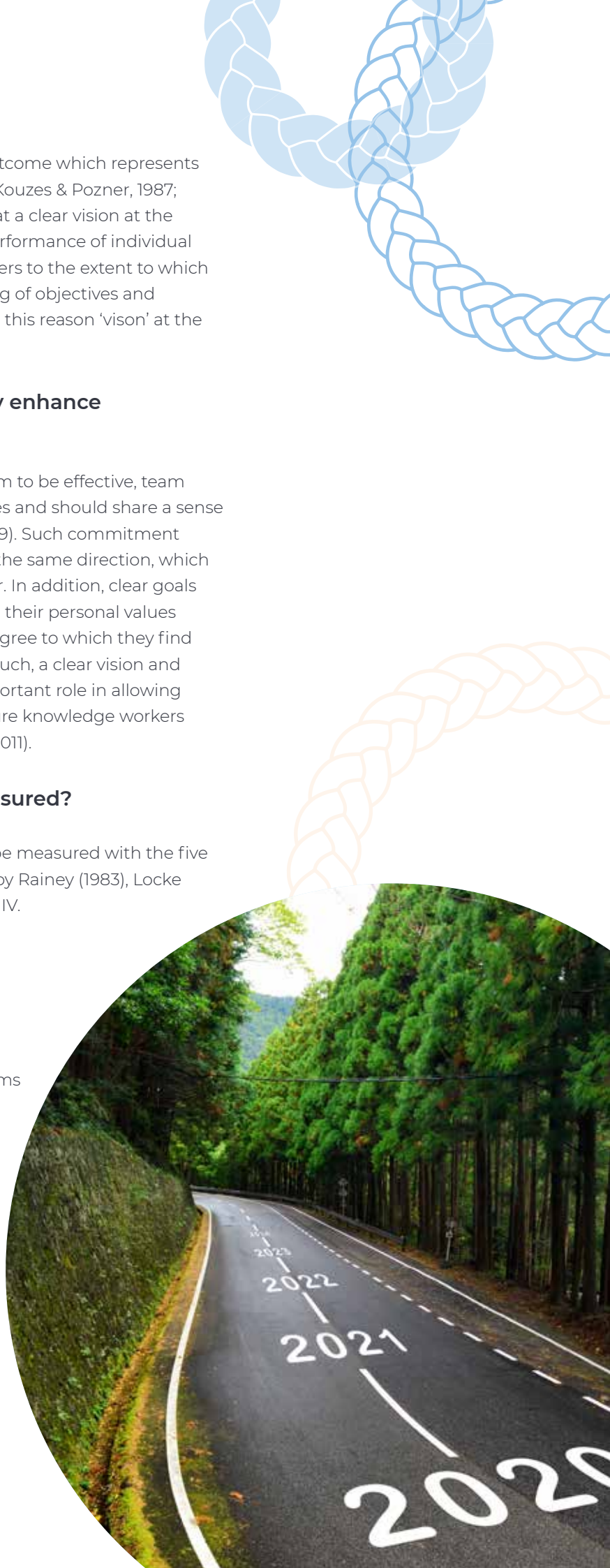
Several researchers have pointed out that for a team to be effective, team members need to be committed to team objectives and should share a sense of purpose and responsibility (Hülshager et al., 2009). Such commitment can help to point a team of knowledge workers in the same direction, which enhances cooperative and goal-directed behaviour. In addition, clear goals help knowledge workers see connections between their personal values and the values of the team, which increases the degree to which they find meaning in their work (Wright & Pandey, 2011). As such, a clear vision and commitment to long-term objectives plays an important role in allowing 'freedom to act', while at the same time making sure knowledge workers are responsible for producing results (Simon et al 2011).

How can Vision and Goal Clarity be measured?

The level of vision and (perceived) goal clarity can be measured with the five questions adapted from validated questionnaires by Rainey (1983), Locke (1984), and Simon (2011) that are listed in Appendix IV.

Factor 5: External Communication

External communication refers to the ability of teams to span boundaries (team and organisational) to seek information and resources from others. Research has demonstrated that the more external communication knowledge workers experience with colleagues outside their team or organisation, the more likely they are to be innovative (Hülshager et al., 2009). For example, a study of over 400 California hospitals over ten years found considerable support for the relationship between inter-organisational links and innovation in hospital services and technology (Goes & Park, 1997).






How does External Communication enhance performance?

External communication enhances the likelihood of obtaining new knowledge and discloses new perspectives. These in turn spark the development of new ideas (creativity) or the adoption of new ways of doing things (innovation). Knowledge worker teams whose tasks require creativity and innovation tend to experience enhanced performance when they undertake external communication (Ancona et al 1992).


How can External Communication be measured?

The level of external communication can be measured with the three questions adapted from validated questionnaires by Teigland & Wasko (2003) and Ancona & Caldwell (1992) that are listed in Appendix IV.

Factor 6: Team Empowerment



Psychological empowerment refers to the perception that workers can perform their tasks competently and have autonomy to decide how to do their jobs, and that their behaviour makes a difference. As such, team empowerment refers to shared perceptions among team members regarding the team's collective level of empowerment. Teams that are more empowered feel that they have more intrinsically meaningful or worthwhile work and, as a group, have a higher degree of choice or discretion in deciding how they carry out their team tasks (Seibert, 2011).




How does Team Empowerment enhance the level of performance?

Psychological empowerment has been associated with a wide range of outcomes, such as job satisfaction, organisational commitment and turnover. It has been demonstrated, however, that psychological empowerment is also positively related to work performance. It is assumed it enhances performance because it increases:

- » the amount of information and control workers have over their work;
- » the level of work-related knowledge, skills, and abilities possessed by employees; and
- » the level of motivation employees have to achieve the goals of the organisation (Seibert, 2011).

How can Team Empowerment be measured?

The level of team empowerment can be measured with the six questions adapted from Kirkman and Rosen's (1999) team empowerment scale that are listed in Appendix IV.



Factor 7: Psychological Safety

Psychological safety is a group-level phenomenon that refers to the shared belief held by members of a group that the group is safe for 'interpersonal risk taking' - a sense of confidence that others will not embarrass, reject or punish someone for speaking up (Edmondson, 1999). Psychological safety is related to 'intra-team trust', but includes:

- » respect for each other's competence.
- » caring about each other as people.
- » trust in each other's intentions.

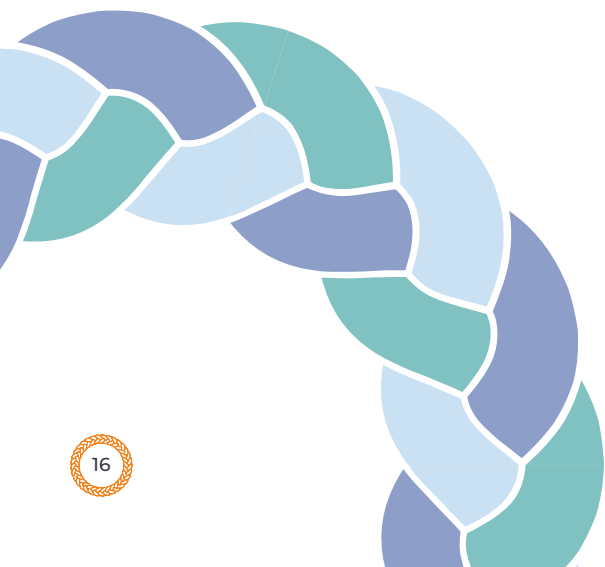
Amy Edmondson, who first identified the concept of psychological safety in work teams in 1999, emphasizes that psychological safety does increase by talking about the need for it or to urge others to trust, because it is determined by the group members' experiences.

How does Psychological Safety enhance the level of performance?

Psychological safety is assumed to be a prerequisite for group learning. If group members feel psychologically safe they will be more willing to ask for help, admit an error or seek feedback; and those actions will foster learning in the group, which improves their performance.

How can Psychological Safety be measured?

The level of psychological safety can be measured with the seven questions adapted from Edmondson's (1999) psychological safety questionnaire that are listed in Appendix IV.



Factor 8: Group Goals

In one's personal life, a goal is simply something you are trying to do or achieve. In the domain of management, a goal can be defined as an observational or measurable organisational outcome to be achieved within a specified time limit (Locke & Latham, 2002). As such, organisational goal-setting can refer to desired work or business outcomes, as well as the intention or plan to act towards them. Goal setting is one of the most researched topics in the field of industrial and organisational psychology.

A large number of high quality studies have consistently demonstrated that specific, difficult goals yield higher performance than nonspecific ("do-your-best") goals, and specific difficult goals yield higher performance than specific easy goals. Several studies suggest that setting goals at the group level may yield higher performance than individual goals (Kleingeld, 2011). In addition, it is assumed that group goals trigger unique motivational mechanisms such as planning, cooperation, morale-building communication, and collective efficacy within a team.

How do Group Goals enhance the level of performance?

According to goal-setting theory, goals affect performance through four causal mechanisms (Latham, 2004). Firstly, goals serve a directive function. They direct an employee's attention and effort towards goal-relevant activities and away from goal-irrelevant ones. Secondly, goals have an energising function. As such, high goals lead to greater effort than low goals. Thirdly, goals also affect persistence. When employees are allowed to control the time they spend on a task, hard goals prolong effort. Finally, goals affect action indirectly by leading to the arousal, discovery and/or use of task-relevant knowledge and strategies, which increases the odds for success (Locke & Latham, 2002).





Conclusion

Knowledge worker productivity is widely studied and the available evidence is rich in both quantity and quality. Based on this evidence, we conclude that there are a wide range of factors that are associated with knowledge worker productivity, of which social cohesion, perceived supervisory support, information sharing, vision/goal clarity, external communication, team empowerment, psychological safety and group goals tend to demonstrate the largest associations.



Limitations

To provide a 'rapid' review, concessions were made in the breadth and depth of the search process. As a consequence, some relevant studies may have been missed.

A second limitation concerns the critical appraisal of the studies included: this REA does not incorporate a comprehensive review of the psychometric properties of the tests, scales and questionnaires used.

A third limitation concerns the fact that this REA focused only on the (zero order) correlations and did not take into account possible moderators and/or mediators that may influence the impact of the effect sizes found.

Finally, this REA focused only on meta-analyses. As a consequence, new, promising findings published in primary studies may have been missed. Given these limitations, care must be taken not to present the findings presented in this REA as conclusive.

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Appendix I

Search terms & hits

ABI/Inform Global, Business Source Elite, PsycINFO peer reviewed, scholarly journals, Oct 2013

Search terms	ABI	BSP	PSY
S1: ab(productivity) AND su(meta-analysis)	33	42	18
S2: ab(performance) AND su(meta-analysis)	299	262	264
S3: ab(employee*) OR ab(worker*) OR ab(team*)	87,517	139,500	135,288
S4: S2 AND S3, limit > 1980	81	49	17

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

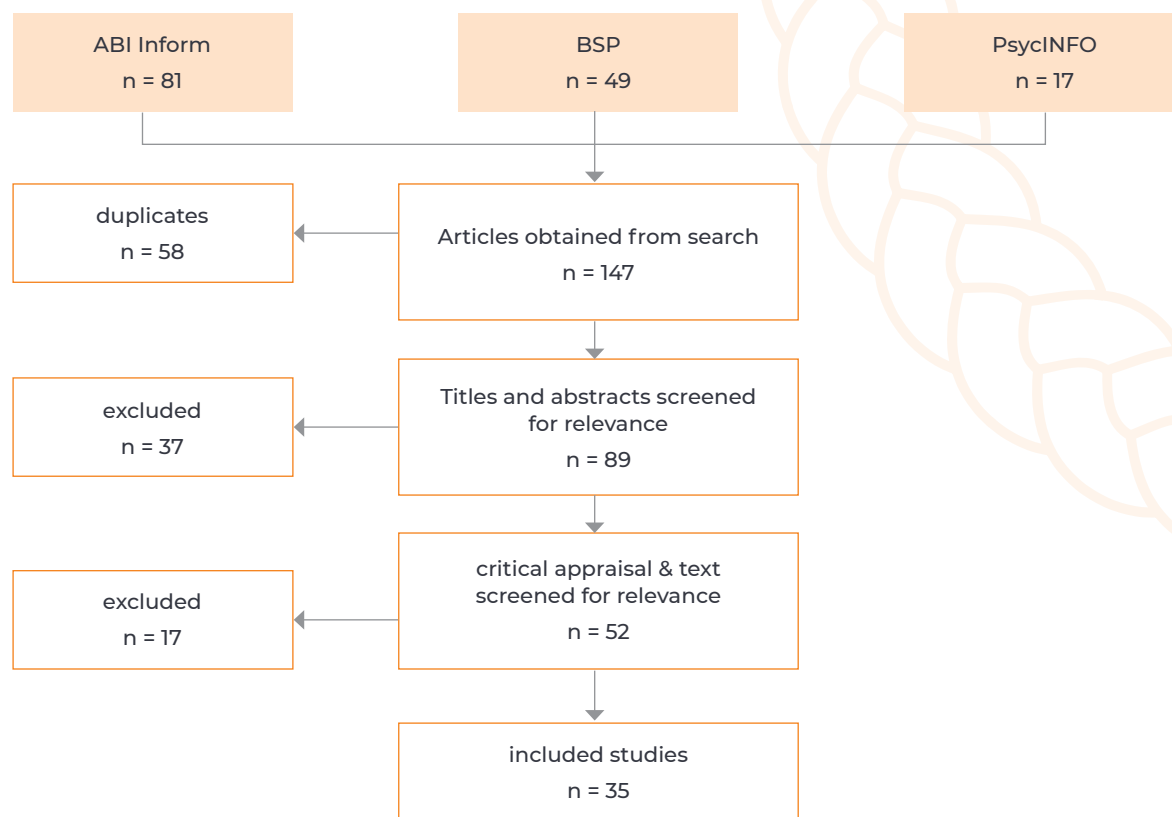
Search terms	ABI	BSP	PSY
S1: ab(productiv*) OR ab(perform*)	312,784	445,239	438,353
S2: ab(work*) OR ab(employe*) OR ab(team*)	414,753	510,869	565,736
S3: S1 AND S2	83,977	102,518	86,745
S4: ti(meta-analy*) OR ab(meta-analy*) OR ti("systematic review") OR ab("systematic review")	7,894	8,270	na
S5: S3 AND S4, limit > 2010	514	289	580



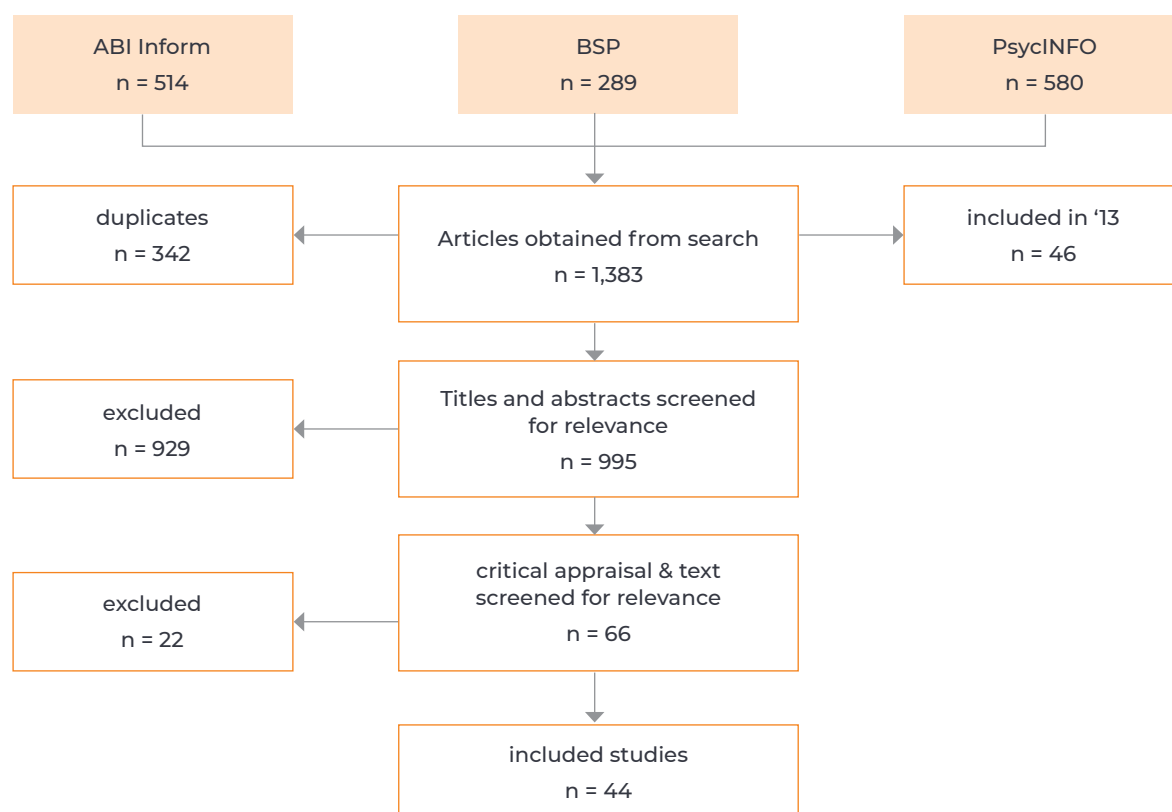
Appendix II

Selection of studies

Study selection, 2013



Study selection, 2019



Appendix III

Overview of included meta-analyses

1st Author & year	Design included studies & sample size	Sector / Population	Main findings	I & D Variables	Effect sizes	Limitations	Level
Allan, 2019	not specified k 44 N = 23,144		Using job characteristics theory as a framework, meta-analytic effect sizes were calculated between meaningful work and various outcomes and was a mediated model tested of meaningful work predicting proximal and distal outcomes with meta-analytic structural equation modelling (MASEM). The best MASEM fitting model was meaningful work predicting work engagement, commitment, and job satisfaction and these variables subsequently predicting self-rated performance, organisational citizenship behaviours, and withdrawal intentions.	I = meaningful work D = self-rated job performance, organisational citizenship behaviour, negative affect	OCB $r = .33$ (k=3) Performance $r = .33$ (k=5)	no serious limitations	C
Avey, 2011	experimental, quasi-experimental and correlational studies k = 51 N=12,567		Psychological capital (PsyCap) consists of the four positive psychological resources of hope, optimism, efficacy, and resilience. The results indicated positive relationships between PsyCap and desirable employee attitudes (job satisfaction, organisational commitment, psychological well-being), desirable employee behaviours (citizenship), and multiple measures of performance (self, supervisor evaluations, and objective). A sub-analysis found no major differences between the types of performance measures used (i.e., between self, subjective, and objective).	I = positive psychological capital D = employee performance, behaviour (OCB)	OCB $r = .43$ Employee performance $r = .26$ (overall) $r = .31$ (s) $r = .29$ (sv) $r = .26$ (obj)	High percentage unpublished data	AA

Bachrach, 2019	not specified k = 76 N = 6,869	Research on moderators of TMS to performance relationship. A transactive memory system (TMS) is a collective system for encoding, storing, and retrieving information. Behavioural indicators of TMS are specialisation, credibility and coordination. TMS to performance relationship varies, depending on contextual antecedents.	I = TMS D = performance	Team performance r = .45 Credibility – team performance r = .45 Specialization – team performance r = .36 Coordination – team performance r = .47 TMS – type of performance Task performance r = .44 Affective performance r = .58 Creative performance r = .42	no serious limitations C
Banks, 2014	not specified k = 27 N = 7836	Leader–member exchange (LMX) and team–member exchange (TMX) are associated with workplace outcomes. TMX is positively related to LMX. There appears to be mixed evidence of the contribution from TMX in predicting work outcomes relative to LMX. While TMX does explain practically significant amounts of variance over and above LMX when predicting organisational commitment and job satisfaction, TMX appeared to add little value when predicting job performance and turnover intentions. Also, LMX shows greater relative importance across all four outcomes. For practitioners, these results demonstrate the importance of developing both supervisor–subordinate relationships and team member relationships.	I = LMX and TMX D = Workplace outcomes	LMX – TMX r = .37 TMX Performance r = .25 Satisfaction r = .43 Commitment r = .45 Turnover intentions r = -.16 LMX Performance r = .40 Satisfaction r = .51 Commitment r = .49 Turnover intentions r = -.32	no serious limitations C

Banks, 2017	not specified k = 76 N = 36,031	Results indicate that the Big Five traits and cognitive ability vary in their association with charismatic leadership. Charisma in leaders proved to be an important predictor of supervisor-rated task performance as well as group- or firm-level performance. Due to the relatively small amount of samples explicitly studied in the charismatic leadership literature, more research should focus on the antecedents and outcomes of charisma to increase the robustness of our findings.	I = charismatic leadership D = workplace outcomes	Task performance (sv) Inspirational motivation r = .20 Vision r = .21 CK r = .45 OCB (sv) Idealized influence r = .12 Inspirational motivation r = .28 Group / organisation performance Inspirational motivation r = .08	Some results based on small k C
Breuer, 2016	cross-sectional and longitudinal studies k = 54 N = 12,615 (1,850 teams)	Team trust facilitates coordination and cooperation in teams, and is therefore positively related with team effectiveness (attitudes, information processing and team performance). The relationship between team trust and team task performance was stronger in virtual teams than in face-to-face teams.	I = team trust D = team effectiveness	Team effectiveness overall r = .33 Team attitudes r = .64 Team information processing r = .54 Team performance r = .27 (task performance r = .27, contextual performance r = .27)	Search terms not specified B

Carter, 2019	not specified k = 428		<p>The review integrates research concerning team composition, task design, and team leadership to provide a meta-analytic and comprehensive review of team design characteristics. Regarding team composition research continues to emphasise complex, configurational models that best capture the asymmetric inputs of team members. For task design characteristics, the results situate autonomy, feedback, interdependence, and meaningfulness as important factors. For leadership, not only do leaders need to provide empowering and transformational approaches, but relational and directive approaches also hold promise as influential drivers of team performance.</p>	<p>I = team characteristics (team composition, task design, team leadership)</p> <p>D = team performance</p>	<p>See table 1-3 for correlations</p> <p>team composition $r = .14 - .15$</p> <p>task design $r = .05 - .30$</p> <p>team leadership $r = .27 - .30$</p>	<p>Data extraction not specified</p> <p>Some results based on small k</p> <p>Many characteristics</p> <p>D</p>	
Cerasoli, 2014	not specified k = 183 N = 212,468	School, work, physical domain	<p>Review focussed on the interrelationship among intrinsic motivation, extrinsic incentives, and performance, with reference to two moderators: performance type (quality vs. quantity) and incentive contingency (directly performance-salient vs. indirectly performance-salient). Intrinsic motivation is a medium to strong predictor of performance regardless of whether incentives are present. Intrinsic motivation was less important to performance when incentives were directly tied to performance and was more important when incentives were indirectly tied to performance. Intrinsic motivation predicted more unique variance in quality of performance, whereas incentives were a better predictor of quantity of performance.</p>	<p>I = intrinsic motivation, extrinsic incentives</p> <p>D = performance (quality, quantity)</p>	<p>Intrinsic motivation - performance overall $r = .26$</p> <p>Intrinsic motivation - performance quality $r = .35$</p> <p>Intrinsic motivation - performance quantity $r = .26$</p> <p>Intrinsic motivation - performance - indirect incentive $r = .45$</p> <p>Intrinsic motivation - performance - direct incentive $r = .30$</p>	<p>no serious limitations</p> <p>C</p>	

Ceri-Booms, 2017	not specified k = 89		Meta-analytic review of the relationship between person and task-focused leader behaviours, on the one hand, and team performance, on the other hand. There is a moderate positive association between both types of leadership behaviours and subjective team performance. For objective team performance, the effect sizes are smaller, yet positive for task-focused leadership behaviours and for person-focused leadership behaviours. The relationship is moderated by measurement method, level of analysis, team type and task independence.	I = task and person-focused leadership behaviours D = team performance	Subjective team performance $p = 0.33$ Objective team performance $p = 0.19$ (task-focused leadership behaviour) $p = 0.18$ (person-focused leadership behaviour)	no serious limitations	C
Chamberlin, 2017	correlational studies k = 189 N = 71,820		Undifferentiated constructive voice is associated with a wide range of antecedents. We also find that undifferentiated constructive voice has a moderate zero-order association with job performance (1) that is nonsignificant when task performance and organisational citizenship behaviour are also considered (2). Although promotive voice has a positive association with job performance, the opposite is true for prohibitive voice. Voice could potentially be managed through a wide array of organisational practices and policies, whereas speaking up with ideas that reflect opportunities for the organisation may be rewarded, speaking up to prevent harm or loss to the organisation may be punished.	I = Voice (promotive and prohibitive) D = Job performance	(1) Job performance $r = .30$ (2) Job performance Task performance $b = .48$ OCB $b = .20$ Voice $b = .02$	Many variables	C
Chamberlin, 2017	correlational studies k = 151 N = 53,200	Employees	Empowerment and voice independently transmit the effects of high-performance managerial practices HPMP (skill-enhancing, motivation-enhancing, opportunity-enhancing) to job performance, but they sequentially mediate the relationship as well. The study reinforces the idea that HPMP are positively associated with feelings of empowerment, voice, and ultimately job performance.	I = HPMP D = job performance, empowerment, voice	Job performance $r = .16$ Empowerment $r = .42$ Voice $r = .30$ More ES in Table 2	no serious limitations	C

D'Innocenzo, 2016a	not specified k = 50 n = 3,198 (teams) N = 16,010		<p>There is support for the positive relationship between shared leadership and team performance. There are a number of moderators (e.g. measurement technique, task complexity, team type). There is empirical support of adopting network conceptualisations. Understanding the network structure can provide specific information about who is dominating the interaction, who is peripheral, and if interactions are entrenched between two or three competing factions. The results suggest that, once established, shared leadership offers benefits in terms of higher team performance.</p>	<p>I = shared leadership</p> <p>D = team performance</p>	<p>Team performance $r = .21$</p>	<p>no serious limitations</p>	C
De Jong, 2016	not specified k = 112 N = 77,763		<p>Intrateam trust is positively related to team performance. The trust– performance relationship is contingent upon the level of task interdependence, authority differentiation, and skill differentiation in teams. Cognitive-based trust and affect-based trust dimensions have unique, positive relationships with team performance. The authors suggest to maximise team performance, trust building initiatives should focus on developing both cognitive and affective bases of trust within the team, and enhance team members' trust both in each other and in the team leader. Team trust will be most critical when team members work in a highly interdependent manner, with other members who possess unique skills and have different levels of authority in the team.</p>	<p>I = intrateam trust</p> <p>D = team performance</p>	<p>Team performance overall $r = .30$</p> <p>Cognitive-based trust $b = .24$</p> <p>Affect-based trust $b = .15$</p> <p>Moderator analyses results in Table 1</p>	<p>Search terms not specified</p>	C

Frazier, 2017	not specified k = 136 N = > 22,000, (5,000 groups)	Psychological safety impacts important organisational outcomes. It is positively related to information sharing, citizenship behaviours and task performance. There are personality traits that are positively related to psychological safety. The results indicate that psychological safety is impacted by positive leader relations (e.g. transformational leadership), workplace support (e.g. peer support), and work design (e.g. interdependence).	I = psychological safety D = task performance, OCB	Task performance r = .43 Information sharing r = .52 OCB r = .32	Search terms not specified B	
Garbers, 2014	laboratory experiments and quasi-experimental studies k = 146 N = 31,861	Individual and team-based financial incentives are positively related to peoples' performance. For individual incentives the effect size was larger for qualitative than quantitative performance measures, and smaller for less complex tasks. For team- based incentives equitably distributed rewards resulted in higher performance than equally distributed rewards. The effect of team-based rewards depends on team size and gender composition.	I = financial incentives D = job performance	g = .35 (overall) g = .32 (individual) g = .45 (team)	Search terms not specified No attempt to search for grey literature	
Greer, 2018	not specified k = 54 N = 13,914 teams	Hierarchy has the potential to both benefit and harm team effectiveness. On net, hierarchy negatively impacts team performance. This effect is mediated by increased conflict-enabling states. The negative relationship between hierarchy and team performance is exacerbated by aspects of the team structure (i.e., membership instability, skill differentiation) and the hierarchy itself (i.e., mutability), which make hierarchical teams prone to conflict. The predictions regarding the positive effect of hierarchy on team performance as mediated by coordination- enabling processes, and the moderating roles of several aspects of team tasks (i.e., interdependence, complexity) and the hierarchy (i.e., form) were not supported.	I = hierarchy D = team performance	r = -.08 More moderator	no serious limitations	

Gully, 2012	not specified k = 51		The research assessed the effects of level of analysis and task interdependence on the cohesion-performance relationship. Cohesion is positively related to performance. Level of analysis and task interdependence moderate the cohesion-performance relationship. There is a stronger relationship on the group level as compared to the individual level and for high task interdependence compared to low task interdependence.	I = cohesion D = performance	r = .199 overall	Some studies have small sample sizes	C
Hartnell, 2019	not specified k = 148 N = 26,196 organisations, 556,945 informants		The study assessed whether organisational culture dimensions CVF (Cameron & Quinn) explain additional variance in organisational outcomes apart from variance explained by leadership and high-performance work practices (HPWPs). Results show that organisational culture dimensions are collectively the most significant drivers (relative to leadership and HPWPs) of employee and operational outcomes, suggesting that adhocracy and clan values should be prioritised to support employee outcomes and adhocracy and market values should be emphasised to support operational outcomes. Results also indicate that HPWPs have the most important impact on organisational criteria such as innovation, customer, and financial outcomes.	I = culture D = organisational effectiveness	For overview of effect sizes see Table 4	no serious limitations	C

Kleingeld, 2011	3/4 lab studies, 1/4 field studies; only studies with pre-test and control group k = 49, N(groups) = 739; N(individuals) = 2954	<p>Specific difficult goals yield considerably higher group performance compared with nonspecific goals. Moderately difficult and easy goals were also associated with performance benefits relative to nonspecific goals, but these effects were smaller.</p> <p>Unexpectedly, task interdependence, task complexity, and participation did not moderate the effect of group goals. Our inventory of multilevel goals in interdependent groups indicated that the effect of individual goals in groups on group performance was contingent upon the focus of the goal: 'Egocentric' individual goals, aimed at maximising individual performance, yielded a particularly negative group-performance effect, whereas 'group centric' goals, aimed at maximising the individual contribution to the group's performance, showed a positive effect.</p> <p>These findings demonstrate that group goals have a robust effect on group performance. Individual goals can also promote group performance but should be used with caution in interdependent groups.</p>	<p>I = group goals</p> <p>D = group performance</p>	<p>overall d = .56</p> <p>specific & difficult d = 0.80</p> <p>group centric d=1.2</p>	<p>No serious limitations</p> <p>AA</p>	
Kurtessis, 2017	not specified k= 558	<p>Perceived Organisational Support (POS) was positively related to effort on behalf of the organisation; in-role performance, and OCB.</p> <p>Note: perceived supervisory support correlates .6 ($\beta = .20$) with POS.</p>	<p>I = perceived organisational support</p> <p>D = individual task performance</p>	<p>$\rho = .19$ (m)</p> <p>$\rho = .22$ (s)</p> <p>$\rho = .16$ (sv)</p>	<p>31 hypothesis were tested</p> <p>C</p>	

Lee, 2018	not specified	Evidence was found for the positive effects of Empowering Leadership (EL) on performance, organisational citizenship behaviour, and creativity at both the individual and team levels.	I = empowering leadership	ind task perf = $p = .21$ (m) ind task perf = $p = .26$ (s) ind task perf = $p = .08$ (obj) team perf = $p = .24$ (m) team perf = $p = .29$ (s) team perf = $p = .24$ (oth)	Search strategy somewhat not specified	C
k = varying from 5 to 27, (n varies from 1000 to 8000)	population:	At the individual level, both trust in leader and psychological empowerment mediated the relationships of EL with task performance, organisational citizenship behaviour, and creativity. We also found evidence that leader-member exchange was a significant mediator between EL and task performance. At the team level, empowerment mediated the effects of EL on team performance, whereas knowledge sharing showed no significant indirect effect.	D = task performance, OCB, creative performance (both individual and team)	ind OCB = $p = .37$ (m) ind OCB = $p = .44$ (s) ind OCB = $p = .30$ (oth) ind crea = $p = .35$ (m) ind crea = $p = .40$ (s) ind crea = $p = .33$ (oth) team crea = $p = .32$ (m)	CI's for task perf and creativity rather wide	

Marlow, 2018	field and lab/ experimental studies k = 150	population	<p>First, communication quality had a significantly stronger relationship with team performance than communication frequency.</p> <p>Second, further distinguishing between different communication types, classifying communication into the eight most commonly measured communication forms (e.g., knowledge sharing, information elaboration), has further value; information elaboration has the strongest relationship with performance while self-report frequency and objective frequency have the weakest relationships.</p> <p>Third, familiar and face-to-face teams exhibited a stronger relationship between communication and performance.</p> <p>Fourth, there was a significant difference between fully virtual teams and face-to-face teams. However, the difference between hybrid teams and face-to-face teams was not significant.</p> <p>Note: Shared leadership, task type, task interdependency, gender composition, publication year, sample type, study type, performance source, communication source, team size, team age, organisational tenure, and type of performance did not impact the strength of the relationship.</p>	<p>I = communication (general, information elaboration, knowledge sharing, information sharing)</p> <p>D = team performance</p>	<p>comm in general $p = 0.31$</p> <p>knowledge sharing $p = 0.44$</p> <p>general information sharing $p = 0.30$</p> <p>information elaboration $p = 0.52$</p> <p>Effect of familiarity on the relationship between communication and performance = $p = 0.30$</p>	<p>No serious limitations</p> <p>AA</p>
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Martin, 2016	not specified k varies from 146 to 19	population	<p>The results show a positive relationship between LMX and task performance and citizenship performance and negatively with counterproductive performance.</p> <p>Trust, motivation, empowerment and job satisfaction mediated the relationship between LMX and task and citizenship performance with trust in the leader having the largest effect.</p>	<p>I = LMX</p> <p>D = individual task performance & OCB</p>	<p>task performance $\rho = .30$</p> <p>objective task performance $\rho = .24$</p> <p>OCB $\rho = .34$</p>	no serious limitations	C
Mathieu, 2015	longitudinal studies (and two additional single longitudinal studies) k=15 ((N = 737 teams)	Population:	<p>Cohesion and performance were related positively and reciprocally over time (while controlling for previous performance).</p> <p>However, on average, the cohesion > performance relationship exceeded the performance > cohesion relationship. Moreover, the cohesion > performance relationship grew stronger over time whereas the performance > cohesion relationship did not.</p> <p>Our results suggest that it takes time for team cohesion, as an emergent state, to develop and solidify before it begins to relate significantly to later performance. Following this logic, one might conclude that it would be beneficial to try and accelerate the process by engaging in team building, chartering exercises, and other activities that are designed to enhance team morale and cohesion.</p>	<p>I = Group cohesion</p> <p>D = team performance</p>	<p>MA: $\rho = .27$ (T1) to $.35$ (T2)</p>	No serious limitations	B

McEwan, 2017	<p>RCT's, and controlled/longitudinal studies</p> <p>k=72 (194 effect sizes and 8439 participants)</p>	Population:	<p>Balanced against the contributions and insights provided by the various moderator analyses conducted in this study, the overall take-home message is that teamwork training is an effective way to foster teamwork and team performance.</p> <p>These effects appear to be evident across a range of samples, utilising numerous intervention methods, and when considering various measurement characteristics.</p> <p>Interventions appear to be particularly effective when they target multiple dimensions of teamwork and include experiential activities for team members to actively learn about, practice, and continually develop teamwork (see section 'What Type of Training Works?')</p>	<p>I = teamwork training (see paper for types)</p> <p>D = team performance</p>	<p>overall d = 0.92.</p> <p>intact teams d = .99</p> <p>new teams d = .54</p> <p>ES's vary across settings: d = .4 - 1.76</p>	<p>No serious limitations</p> <p>AA</p>	
Mesmer Magmus, 2017-1	<p>not specified</p> <p>k = 270 (N = 58,592)</p> <p>note: performance ES based on 12 studies</p>		<p>With regards to personal benefits, trait mindfulness was found to be positively correlated with confidence, mental health, emotional regulation, and life satisfaction, and negatively correlated with perceived life stress, negative emotions, anxiety, and depression. Professionally, results suggest trait mindfulness may benefit job satisfaction, performance, and interpersonal relations, while also reducing burnout and work withdrawal.</p> <p>Note difference state vs trait mindfulness!</p>	<p>I = trait mindfulness</p> <p>D = individual job performance</p>	<p>p = .34</p>	<p>no serious limitations</p> <p>C</p>	

<p>Mesmer Magnus, 2017-2</p> <p>(NOTE: update of DeChurch 2010)</p>	<p>not specified</p> <p>k = 28</p> <p>(results from 4,943 teams / 19,575 individuals)</p>	<p>Results show consistent effects for team cognition in team process and performance. However, whereas originally compilational cognition was more strongly related to both team process and team performance than was compositional cognition, in the updated database, compilational cognition is more strongly related to team process and compositional cognition is more strongly related to team performance.</p> <p>In essence, this updated finding suggests that knowing who knows what (e.g. transactive memory) is more important to predicting effective and efficient team process, while having a shared understanding of the problem, task, or team (e.g. SMMs) is more influential in predicting the extent to which a team will be successful.</p>	<p>I = team cognition</p> <p>D = team performance</p> <p>Note: team cognition includes SMM (compositional cognition) and TMS (compilation cognition)</p>	<p>overall $p = .36$</p> <p>compositional $p = .39$</p> <p>compilation $p = .029$</p>	<p>no serious limitations</p> <p>C</p>
<p>Mesmer Magnus, 2018</p>	<p>not specified</p> <p>k=39</p> <p>(N = 5,618)</p>	<p>As hypothesised, we find that whereas team identity fully mediates the relationship between organisational identity and team affective constructs (i.e., aspects of team functioning not instrumental to the fulfillment of organisational identity), organisational identity uniquely and directly affects cooperative team behaviour and team performance.</p>	<p>I = organisational identity</p> <p>D = team performance</p>	<p>$p = .31$</p> <p>$p = 0.18$</p>	<p>No differentiation between self-, sv, or objective measures of team performance</p> <p>C</p>

Murayama, 2012	not specified k = 65		<p>The first meta-analysis revealed that there is no noteworthy relation between competition and performance.</p> <p>The second meta-analysis showed, in accord with the opposing processes model, that the absence of a direct effect is the result of inconsistent mediation via achievement goals: Competition prompts performance-approach goals which, in turn, facilitate performance; and competition also prompts performance-avoidance goals which, in turn, undermine performance.</p> <p>Note: no difference between US vs non-US, gender, type of performance, or sector.</p>	<p>I = interpersonal competition (trait or environmental)</p> <p>D = individual task performance</p>	<p>overall $r = .05$</p> <p>(excluding outliers = .03)</p>	<p>no serious limitations</p>	C
Ng, 2017	not specified k = 600+		<p>The findings showed that TFL was related to variables that represented these mechanisms, which in turn were associated with non-self-report measures of employees' task performance, citizenship behaviour, and innovative behaviour.</p>	<p>I = transformational leadership</p> <p>D = task performance, OCB and innovative behaviour</p>	<p>self-report all around $r = .4$</p> <p>non self report all around $r = .25$</p>	<p>no serious limitations</p>	C
Nicolaides, 2014	not specified k = 467		<p>Examines the relationship between shared leadership and team performance.</p> <p>Mediation analyses supported the hypothesis that team confidence partially mediates the effects of shared leadership on team performance.</p> <p>We also found support for the notion that shared leadership explains unique variance in team performance, over and above that of vertical leadership.</p>	<p>I = shared leadership</p> <p>D = team performance</p>	<p>$\rho = .35$</p> <p>Note: SL explained an additional 5.7% of the variance in team performance beyond vertical leadership</p>	<p>no serious limitations</p>	C

Nyberg, 2018	not specified k = 41	Provides a review of the theory and evidence pertaining to the relationships between different collective pay for performance (PFP) types and collective outcomes. We also provide a meta-analysis that shows that collective PFP has desirable outcomes, substantiating the value of studying collective PFP separately from individual PFP.	I = collective/team pay for performance D = performance (financial, operational, etc.)	low effect sizes ($r = .1$), irrespective of type of collective pay or type of performance outcome	inadequate search strategy	C
O'Boyle, 2017	not specified k = 102	Employee ownership has a small, but positive and statistically significant relation to firm performance ($r = 0.04$).	I = employee ownership (eg employee stock ownership plans) D = firm performance	$r = .04$	no serious limitations	C
Rudolph, 2017	not specified k = 122 (N = 35,670)	Findings from a meta-analysis of relationships between job crafting behaviours and their various antecedents and work outcomes.	I = job crafting D = individual task performance	self-rated $R^2 = 12\%$ other-rated $R^2 = 11\%$	no serious limitations	C
Rudolph, 2018	cross-sectional and longitudinal studies k = 40 (N = 19,112)	Occupational future time perspective (OFTP) refers to employees' perceptions of their future in the employment context. OFTP is associated with ..., task and contextual performance.	I = OFTP D = individual task and contextual performance	task $\rho = 0.11$ cont $\rho = 0.20$	no serious limitations	B
Saridakis, 2017	longitudinal studies k = 8	The results demonstrate an overall reported correlation of 0.287. Additionally we find that a set of integrated, mutually reinforcing HPWPs has a stronger impact on firm performance than do HRM practices individually and that, this effect is statistically invariant between operational performance and financial performance.	I = HR practices D = firm performance	$r = .21$	Construct HRM practices is very broad (varies from training and personal development, to job design and compensation)	B

Schneid, 2016	not specified k = 74	The purpose of this paper is to synthesise the literature on the relationship between age diversity (AD) and the essential team outcomes (i.e. performance quality, financial effectiveness, innovation and creativity, turnover).	I = age diversity D = financial performance, effectiveness, performance quality, innovation and creativity	all ES close to zero and ns (irrespective of the way the outcome was measured)	no serious limitations	C
Shockley, 2012	not specified k = 114	The dimensional state affect results support the affect-behaviour congruence trend, such that positive affect positively related to behaviour that benefits the organisation (task performance and OCB) and negative affect showed a positive association with harmful organisational behaviour (CWB). Similarly, positive affect was negatively related to CWB, and negative affect was negatively related to task performance, although it did not relate to OCB.	I = affect state (emotions, mood) D = individual job performance	negative affect $p = -.14$ positive affect $p = .20$	no serious limitations	C
Sui, 2019	(all types of) experimental studies k = 45	Examined the impact of environmental, behavioural, and combined interventions to reduce occupational sedentary behaviour on work performance and productivity outcomes. Overall, standing interventions do not appear to impact productivity/ performance outcomes, whereas walking and cycling interventions demonstrate mixed null/negative associations for productivity outcomes.	I = interventions to reduce occupational sedentary behaviour D = productivity outcomes	0 or practically irrelevant	no serious limitations	AA

Turner, 2014	k = 18 (768 teams, n = 13,491)	<p>The primary focus of this meta-analysis is to identify which measure of the six team cognition constructs (shared mental models, SMM; team mental models, TMM; information sharing, IS; transactive memory systems, TMS; cognitive consensus, CC; group learning, GL) produced the best performance outcome results.</p> <p>The one team cognition construct that stood out was that of IS, with statistical findings greater than the constructs of TMM, GL, and TMS. The two shared cognitive constructs that were not statistically different from IS were SMM and CC; neither of these constructs was found to be significantly different from TMM, GL, or TMS.</p> <p>Note: see discussion & conclusion.</p>	<p>I = team cognition D = team performance</p> <p>SMM $r = .39$ TMM $r = .19$ ns IS $r = .51$ TMS $r = .30$ CC = .42 GL = .15 ns</p>	no serious limitations	AA
Tzabbar, 2017	not specified k = 89	<p>Despite the voluminous research on this issue, the differences in the relationships of various HRM practices explains only 4% of the variance in performance, whereas, societal context, industry sector and firm size explain 33%, 12% and 8%, respectively.</p> <p>Empirical contingencies including four categories of performance outcomes and four types of participants explain 13% and 9% of the variance in the results, respectively.</p>	<p>I = HR practices D = financial and operational performance</p> <p>$z/r = .09$ $r^2 = 4\%$</p>	<p>search strategy not specified</p> <p>Construct HRM practices is very broad (varies from career opportunities to profit sharing)</p>	D

Wang, 2014	not specified k = 42 (covering 3,439 teams and 32,616 individuals, with an average size of 9.48 members per team)	We meta-analytically cumulated 42 independent samples of shared leadership and examined its relationship to team effectiveness. Our findings reveal an overall positive relationship (.34). But perhaps more important, what is actually shared among members appears to matter with regard to team effectiveness. That is, shared traditional forms of leadership (e.g., initiating structure and consideration) show a lower relationship (.18) than either shared new-genre leadership (e.g., charismatic and transformational leadership; (.34) or cumulative, overall shared leadership (.35). In addition, shared leadership tends to be more strongly related to team attitudinal outcomes and behavioural processes and emergent team states, compared with team performance.	I = shared leadership D = subjective and objective team performance p = .18	subjective performance p = .22 objective performance p = .18	no serious limitations C
Wendsche, 2017	not specified k = 91 (n = 38,124)	Results indicated average positive correlations between detachment and self-reported mental (i.e., less exhaustion, higher life satisfaction, more well-being, better sleep) and physical (i.e., lower physical discomfort) health, state well-being (i.e., less fatigue, higher positive affect, more intensive state of recovery), and task performance (small to medium sized effects).	I = detachment from work D = individual performance	task performance p = .09 contextual performance p = -.13 creativity p = -.11	Person characteristics (eg negative affectivity/ neuroticism) and work characteristics moderates the effect C
Yu, 2018	not specified k = 41 (4,114 workgroups made up of 21,745 individuals)	In a meta-analytic investigation, we found that Leader Member Exchange (LMX) differentiation was detrimental to collective harmony and solidarity, as indicated by a consistent negative relationship with emergent states and group processes. In addition, we found that emergent states and group processes not only mediated the negative indirect relationship, but also suppressed the positive direct relationship between LMX differentiation and group performance.	I = Leader member exchange differentiation D = group performance	objective p = .06 subjective p = -.04 creative p = -.06	no serious limitations C

Overview of excluded meta-analyses

Ahmad & Karim, 2019	Narrative review on impact of knowledge sharing, no quantitative performance outcomes provided.
Alegre et al, 2018	Narrative review on mission statements, no quantitative performance outcomes provided.
Aquilani et al, 2016	Narrative review on TQM success factors, no quantitative performance outcomes provided.
Aufegger et al, 2019	Narrative review on shared leadership, no quantitative performance outcomes provided.
Christian, Garza & Slaughter, 2011	The goals of this study were to identify an agreed-upon definition of engagement. We also found that engagement is related to several key antecedents and consequences.
Chung et al, 2018	Off topic: friendship and group performance. Many studies concern children. Many studies groups size is 2 or 3.
D'Innocenzo et al (2016b)	No meta-analysis or systematic review. The study advances and tests a multi-level model of empowerment which seeks to better understand the unique and synergistic effects between unit and individual empowerment in hospital units.
De Menezes & Kelliher, 2011)	Narrative review on flexible working arrangements and worker performance. The evidence fails to demonstrate a business case for the use of flexible working arrangements.
Erdogan et al, 2012	Narrative review and meta-analysis on life satisfaction and performance. Too many methodological flaws ($r = 1.4$??).
Evans & Dion, 1991	Article from 1991, included in earlier review?
Haas, 2010	Narrative review on diversity and team performance.
Han & Beyerlein, 2016	Systematic review effect of multinational cultural diversity on virtual team processes, framework development.
Knight, 2017	No performance outcomes were measured.
Knight, 2019	No performance outcomes were measured.
MacKay, 2017	Investigates the incremental validity of employee engagement in the prediction of employee effectiveness / performance (result: very low!).
Magpili, 2018	Narrative review, no quantitative performance outcomes provided.
Nielsen, 2017	Too many methodological shortcoming (e.g. construct 'resources' not specified, inclusion of only 'high impact journal' studies, etc).
Nye, 2017	Independent variable is vocational interests (= limited relevance given the REA question).
Paglis, 2010	Traditional, narrative review - no quantitative findings are provided.
Rafique, 2018	Outcome of interest is job satisfaction, no performance measures reported.
Shihag, 2019	Very broad construct ("Controls are defined as any process through which controllers motivate and direct controlees to behave in ways that are aligned with the controllers' objectives"), but only combinations with the word 'control' were used in the search strategy.
Zhou, 2014	No quantitative performance outcomes reported

Appendix IV

Factors/constructs that correlate with performance

Variable	Performance outcome	Knowledge work	Impact	p	k	Level	1st author & year
Task cohesion Shared commitment or attraction to the group task or goal as well as motivation to coordinate team efforts to achieve common work-related goals.	Team performance (Hard outcome measures)	+	++	.38	185	C	Chioocchio, 2009
		-	-	.12	21		
Social cohesion Shared liking or attraction to the group, emotional bonds of friendship, caring and closeness among group members, enjoyment of other's company or social time together.	Team performance (Hard vs Behavioural)	+	+++	B= .70 H= .49	40 30		
		-	++	B= .30 H= .14	160 131		
Group cohesion The commitment of team members to their work team and their desire to maintain group membership.	Team innovation Team performance	+	++	I = .30 p = .19/35	11 51 15	C/B	Hulsheger, 2009 Gully, 2012 Mathieu, 2015
Team Member Exchange (TMX) Horizontal relationships among team memberships.	Team performance		+	.25	27	C	Banks, 2014
Teamwork training Teamwork refers to the range of interactive and interdependent behavioural processes among team members that convert team inputs into outcomes.	Team performance	+	+++	d = .92	72	AA	McEwan, 2017

Interpersonal ties (instrumental & expressive)							
Patterns of informal connections (ties) among individuals within a team.	Team performance	+	+	I = .15 E = .22	17 9		Balkundi, 2008
Collectivism	Team performance						
Loyal to their in-group and sacrifice for the sake of the group.		+	+	.25	14		
Team agreeableness	Team performance						
Considerate, trusting, friendly: the degree to which team members engage in positive interpersonal processes.		+	+	.12	29		Bell, 2007
Job-relevant / task-related diversity							
The heterogeneity of team members with respect to job- or task-related attributes, such as function, profession, education, tenure, knowledge, skills, or expertise.	Team innovation	+	+	.16 .20 <.1	15 3 18		Horwitz 2007 van Dijk, 2011
	Team performance	+/-	0	<.1	24 48 55		Horwitz, 2007 Joshi, 2009 van Dijk, 2011
Background / bio-demographic diversity	Team innovation	+	-	.13 <.1	8 19		Horwitz, 2007 van Dijk, 2011
Non-task-related differences such as age, gender, or ethnicity.	Team performance	+/-	0	<.1	17 69 84 74		Horwitz, 2007 Joshi, 2009 van Dijk, 2011 Schneid, 2016
Role ambiguity	Employee performance	+/-	-	-.24	114	C	Gilboa, 2008

Role / task conflict Situation of conflict over task assignments, as well as the scheduling of delivery / Disagreements among team members about the content of the tasks being performed, including differences in viewpoints, ideas, and opinions.	Employee performance	+/-	-	.10	112		Gilboa, 2008
	Team innovation	+	0	<.1	13	C	Hulsheger, 2009
	Team performance	+/-	0	<.1	95		De Wit, 2012
Relationship conflict Social emotional conflicts stemming from interpersonal disagreements.	Team innovation	+	0	<.1	6	C	Hulsheger, 2009
	Team performance	+	-	.16	80		De Wit, 2012
Employee satisfaction	BU Performance	+/-	+	.22	42?		Harter, 2002
Employee engagement				.22			
Perceived organisational support	Individual task performance	+/-	+	.16/.23	80	C	Riggle, 2009 Kurtessis, 2017
Perceived supervisory support (* = boundary spanners, ** = non boundary spanners).	Employee performance	+/-	+ /+++	.53* .18**	5 4	C	Edmondson, 2013
Support for innovation The expectation, approval and practical support of attempts to introduce new and improved ways of doing things in the work environment.	Individual innovation	+	+	.26	17	C	Hulsheger, 2009
	Team innovation		+++	.58	10		
Organisational commitment (affective / attitudinal)	Performance	+/-	+	WC= .20	84		Riketta, 2002
	(White collar vs Blue collar)			BC= .10	4		

Organisational identity							
The psychological bonds employees form with their work teams and organisations.	Team performance		++	.31	39	C	Mesmer-Magnus, 2018
Individual empowerment (psychological)	Task performance (self-rated)	+/-	+++	.54	12 (s)		
Intrinsic task motivation reflecting a sense of control in relation to one's work and an active orientation to one's work role that is manifest in four cognitions: meaning, self-determination, competence, and impact.	Task performance (non-self rated)	+/-	+	.27	22 (s)		
	Innovation at work	+/-	++	.33	9 (s)	C	Seibert, 2011
Team empowerment	Task performance (self-rated)	+/-	+++	.60	6 (s)		
Refers to shared perceptions among team members regarding the team's collective level of empowerment.	Task performance (non-self rated)	+/-	++	.43	18 (s)		
Empowering leadership	Task performance (individual > objective) (team > other rated)		+	I = .08 T = .24	27	C	Lee, 2018
Participative safety	Individual innovation			.17	17		
Participative safety is characterised by two components: participation in decision-making and intragroup safety.	Team innovation	+	+	.15	15	C	Hulsheger, 2009
Leader-Member Exchange (LMX)	Team performance		+	.25	27	C	Banks, 2014
Vertical relationships among supervisors and subordinates.	Objective task performance		+	.24	146 to 19	C	Martin, 2016
Leader-Member Exchange (LMX) differentiation	objective performance						
	subjective performance		0	< .1	41	C	Yu, 2018
	creative performance						

Team trust	Team performance	+	+	.33	112	B/C	Breuer, 2016 De Jong, 2016
Psychological safety The belief that the workplace is safe for interpersonal risk taking.	Task performance Information sharing		+++	.43 .52	136	B	Frazier, 2017
Vision The extent to which team members have a common understanding of objectives and display high commitment to those team goals (syn: goal clarity or commitment to objectives).	Team innovation	+	+++	.49	17	C	Hulsheger, 2009
Internal communication Sharing of information and ideas within one's own team.	Team innovation	+	++	.36	13	C	Hulsheger, 2009
External communication Sharing of information and ideas with people outside the team or organisation.		+	++	.48	7		
Sense of humor Employees / leaders	Employee performance	+/-	++	E = .36 L = .16	3 9		Mesmer-Magnus, 2012
Task focused leadership	Objective team performance	+/-	+	.19	89	C	Burke, 2006
Person focused leadership		+/-	+	.18	89		Ceri-Booms, 2017
Shared leadership	Team performance	+/-	++	.21	50	C	D'Innocenz, 2016a
	Subjective performance			.35	467		Nicolaidis, 2014
	Objective performance			.22 .18	42	C	Wang, 2014
Transformational leadership	Task performance (self report & non-self report)		++	s = .4 ns = .25	600	C	Ng, 2017

Task interdependence							
The extent to which team members are dependent on one another to carry out their tasks and perform effectively.			0	<.1	4		
Goal interdependence	Team innovation	+				C	Hulsheger, 2009
The extent to which team members' goals and rewards are related in such a way that an individual team member can only reach his or her goal if the other team members achieve their goals as well.			++	.28	5		
Telework	Productivity (perceived)	+	+	.23	5		Harker, 2001
	Employee performance (self rated)	+	0	<.1	9		
Flexible work (telecommuting)	Employee performance (objective)	+	+	.18	4		Gajendran, 2007
	Productivity	+/-	++	d = .45	4		
Flextime work (schedules)	Performance (self rated)	+/-	0	d = .04	5		
	Productivity	+/-	0	d = .04	4		Baltes, 1999
Compressed work schedules	Performance (supervisory rated)	+/-	++	d = .4	4		
Preference for teamwork	Team performance	+	+	.18	10		Bell, 2007
Voice							
Employee suggestions regarding opportunities and initiatives to improve future organisational functioning.	Job performance		++	.30	189	C	Chamberlin, 2017
Situational constraints	Employee performance	+/-	-	.19	8		Gilboa, 2008

Emotional intelligence	Team performance	+	+	.18	6		Bell, 2007
Organisational cynicism Negative attitude toward one's employing organisation.	Job performance (self report)	+/-	0	<.1	4		Chiabaru, 2013
Intrinsic motivation	Performance quality	+/-	++	.35	183	C	Cerasoli, 2014
	Performance quantity			.26			
Intrinsic motivation & direct incentives	Performance			.30			
Intrinsic motivation & indirect incentives	Performance			.45			
Financial incentives (individual and team based).	Job performance		++	g = .32 (ind) g = .45 (team)	146	A	Garbers, 2014
Collective pay for performance	Performance (financial, operational)		0	< .1	41	C	Nyberg, 2018
Employee ownership (e.g. employee stock ownership plans).	Firm performance		0	< .1	102	C	O'Boyle, 2017



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