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HOW PEOPLE FIT IN AT WORK: A SYSTEMATIC REVIEW OF THE ASSOCIATION BETWEEN PERSON-ORGANISATION AND PERSON-GROUP FIT WITH STAFF OUTCOMES IN HEALTHCARE

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ABSTRACT

Objectives: People interact with their workplace and organisation through being, to a greater or lesser extent, compatible with aspects of their setting. This interaction between person and environment is particularly relevant in healthcare settings where compatibility affects not only the healthcare professionals who deliver care but also potentially the patient who receives care. One way to understand this phenomenon is to examine the association between person-organisation (P-O) fit, and person-group (P-G) fit. The aim of this systematic review was to identify and synthesise knowledge on both P-O and P-G fit in healthcare to determine their association with staff outcomes. It was hypothesised that there would be a positive relationship between fit and staff outcomes, such that the experience of compatibility and 'fitting in' would be associated with better staff outcomes.

Design: A systematic review was conducted based on an extensive search strategy guided by PRISMA to identify relevant literature.

Results: Following an abstract and full-text review against the inclusion criteria, 24 articles were retained. Of these, 95.8% (23/24) reported a significant, positive association between perception of fit and staff outcomes in healthcare contexts, such that a sense of compatibility had various positive implications for staff, including job satisfaction and retention.

Conclusions: Evidence suggested an association between employees' perceived compatibility with the workplace or organisation and a variety of staff outcomes in healthcare settings.

ARTICLE SUMMARY

Strengths and Limitations of the study

- Systematic review is specific to healthcare, in contrast to previous reviews in the field of fit research.
- Focus specifically on the components of person-environment fit that contribute to organisational and workplace culture in healthcare settings.

- Results of this review can be leveraged to inform improvements in staff outcomes.

Competing Interests

The authors have no conflicts of interest to disclose.

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Authorship

JH conceptualised and drafted the manuscript and was involved in the search strategy with KC and CP. KC, LAE and JB edited the manuscript and critically reviewed its intellectual content. All authors approve of the final version of the manuscript.

HOW PEOPLE FIT IN AT WORK: A SYSTEMATIC REVIEW OF THE ASSOCIATION BETWEEN PERSON-ORGANISATION AND PERSON-GROUP FIT WITH STAFF OUTCOMES IN HEALTHCARE

How do people fit into their workplace environment, organisation, or group? This is a key aspect to understanding organisational and workplace cultures in healthcare settings.[1-3] Research increasingly attempts to make sense of how shared attitudes, values, beliefs and practices can have downstream effects on outcomes such as productivity and staff retention.[4, 5] In healthcare contexts, culture holds consequences for both staff and patients.[2, 6] The ways in which people experience their organisational and workplace cultures, both in healthcare and other contexts, is intrinsic to this problem, with many culture improvement interventions being designed and implemented.[7-10] However, the components of effective culture change have not been sufficiently teased out, and this may be a contributing factor to explain why interventions have a failure rate as high as 70%.[11] Thus, we need to understand how people interact with their environment, and how culture change strategies can be more efficiently and sustainably implemented in the light of this knowledge.[12] The person-environment (P-E) fit paradigm provides one such research avenue to further understand culture, focusing on *how people perceive themselves in relation to their work environment*. The P-E fit theory describes the compatibility of the individual and an aspect of their work context; for example, fit with the job, supervisor, group, organisation or vocation.[13-15]

Past reviews of P-E fit, although useful in highlighting the relevance of the topic, have synthesised information from across other industries,[16] limiting the utility of these findings to healthcare specifically. Uniquely, the presence of patients and the caring role of health providers creates an important point of departure from other contexts. While there have been quite a range of studies investigating P-E specifically in healthcare settings (such as hospitals,[17] pharmaceutical

distribution firms,[16] and elderly care facilities,[18]) examining outcomes more typically associated with caring work (e.g., burnout), these findings have not yet been rigorously synthesised.[15, 19-21]

Additionally, past systematic reviews on the fit concept have tended to focus exclusively on compatibility between employees and one element of their environment, such as the person-organisation (P-O) or person-group (P-G) fit,[15, 19, 20] or alternatively examined P-E fit as a whole, without differentiation of components such as group or vocation fit.[14] These approaches do not, therefore, account for the possible interactions among different types of fit (i.e., employees may simultaneously experience different levels of fit with their organisation, their supervisor, and their work group). In particular, there is evidence to suggest that organisational cultures and work group subcultures may interact with and influence one another.[22] In P-E fit research, we can measure the interacting individual and contextual factors that determine the compatibility of an individual employee with his or her organisation and work group; these are known as person-organisation (P-O) and person-group (P-G) fit respectively.[23] This emerges if: 1) at least one entity fulfils the needs of the other; 2) they share similar characteristics; or 3) both 1) and 2) occur.[15] **Table 1** offers definitions of the commonly identified components of P-E fit (including supplementary, complementary, needs-supplies and demands-abilities fit) in the literature.

[Insert Table 1 here]

In research investigating P-E fit, one of the most important downstream effects to consider is the impact of fit perceptions on the staff themselves. Although the aim of studying organisational culture in healthcare is often ultimately to improve patient outcomes, employees are the first point of reference in attempts to alter, modify and ultimately transform organisational culture.[24-31] Staff outcomes are particularly important to understand in healthcare settings because of the frequent reports of employee burnout, stress, intent to leave and turnover (see **Figure 1** for a graphical

depiction).[32-36] By first understanding the factors, such as P-E fit that influence these outcomes in healthcare settings, initiatives may be developed to improve staff well-being or reduce, for example, negative organisational cultures.[24-31]

[Insert Figure 1 here]

In the present systematic review, available evidence for the compatibility of staff with the culture of their organisation or workplace, and the effect of this compatibility on staff outcomes, is examined for the first time in healthcare settings. Because of their broader applicability to organisational and workplace cultures, it was decided that both P-O and P-G fit would be examined. Therefore, the aim of this systematic review was to *investigate the extent to which P-O and P-G fit are associated with staff outcomes in healthcare settings.* It was postulated that the majority of studies would show a positive relationship between fit and staff outcomes, such that increased fit would be associated with improved outcomes for staff.

METHODS

Eligibility criteria

All types of empirical study were considered, including longitudinal and cross-sectional analysis, quantitative, qualitative and mixed-methods designs. Each of these methods, if conducted in a valid and rigorous way, had the potential to provide insights by which to address the study's aim. Inclusion was limited to peer-reviewed articles published in academic journals. Additionally, all types of "healthcare" settings were eligible for inclusion in the review, encompassing any front-line clinical environment where health professionals (including clinicians, nurses, allied health professionals, paramedics and pharmacists) directly interact with patients, residents, or consumers.[2]

Information sources

Relevant databases were identified for searching: CINAHL Complete, EMBASE, Ovid MEDLINE, PsycINFO and Scopus. To ensure the maximum number of relevant research articles were included in the review, a date restriction was not applied. The general search strategy (**Table 2**) was cross-checked with related systematic reviews to ensure relevant keywords were incorporated.[4, 5] The initial search was conducted on April 3, 2017 and the results were imported into EndNote.[37] Additionally, snowballing was conducted as systematic, narrative, or scoping reviews were identified and their reference lists searched for other potential articles to include. The reference lists of included articles were subject to the same process.

[Insert Table 2 here]

Selection and data collection process

Guided by the Preferred Reporting Items for Systematic review and Meta-Analyses (PRISMA) statement,[38] an initial title and abstract review was completed based on the inclusion criteria (English language, healthcare context, published peer-reviewed journal article, addresses the aim of the review). A full text review was then conducted. Results were summarised and synthesised. Included articles were sorted according to the data type, setting, staff outcomes measured, and types of fit studied.

Data items

The systematic review aimed to include different components of fit within P-G and P-O fit. Hence, the search strategy encompassed general terms (e.g., "person-organisation fit") as well as more specific terms (e.g., "supplementary").[15, 19] The search strategy also endeavoured to identify staff

outcomes, including but not limited to work attitude,[20, 39] staff satisfaction,[30] burnout,[26-28] work stress,[25, 29, 40, 41] and organisational commitment.[31]

Bias

It was anticipated that there would be biases in individual studies. The Quality Assessment Tool[42] was used to assess the bias and quality across nine categories. Each category was rated on a four-point scale (from 1="very poor" to 4="good) to create a total score, with higher scores denoting higher quality.[6, 43] There was also possible bias in the type of results published, for example, publication bias.[44]

RESULTS

Study selection

Four hundred and twenty-five articles were identified from the database search and snowballing techniques. Duplicates were deleted and the remaining articles were screened. Two authors (JH and CP) independently reviewed 5% of the EndNote Library, and then discussed results until consensus was reached. Cohen's Kappa statistic was 0.84, indicating substantial agreement.[45] The remaining articles were screened by JH. Two hundred and one texts did not meet the inclusion criteria, and the remaining 71 articles were subjected to full-text review (**Figure 2**). Ultimately, 24 articles were included in the review.

[Insert Figure 2 here]

Risk of bias in individual studies

Based on the Quality Assessment Tool,[42] the included articles scored between 23-36 points out of a potential 36 points. The classification system quality grades facilitates the categorisation of articles

as low (9-23 points), medium (24-29 points) and high (30-36 points).[46] In this study, there were three low, two medium and 19 high quality articles.[6] For complete classification of each article, see **Appendix 2** in the Supplementary File.

Study characteristics

The articles in the final analysis originated from multiple countries, including nine from the United States of America (USA),[18, 47-54] four from Canada,[55-58] two from Spain,[59, 60] and one each from China,[61] Germany,[62] Greece,[63] Turkey,[64] Korea,[65] the Netherlands,[66] New Zealand,[67] Norway,[68] and the United Kingdom.[24] There were also differences in the study setting, though the largest proportion of research was conducted in hospitals (54%) (**Table 3**).

[Insert Table 3 here]

The included studies differed in their design. Of the 24 articles, five were longitudinal,[47, 50, 53, 62, 66] and the remaining 19 were cross-sectional. The sample size varied considerably, from 56[68] to 2,563 participants.[57] Additionally, the type of participants varied. The most commonly recruited participants were nurses, followed by physicians. Further information about the specific characteristics of each study is reported in **Appendix 3** of the Supplementary File.

Trends in publication of the included articles provide an insight into the potential of future research examining fit in healthcare. Only two of the 24 included articles were published before the year 2000, with the majority being published after 2010 (**Figure 3**).

[Insert Figure 3 here]

Synthesis of results

Twenty articles exclusively measured P-O fit, two measured P-G fit, and two measured both P-O and P-G fit. The articles measuring P-G fit measured only supplementary value congruence. On the other hand, P-O fit articles measured various components of fit. The strength of the evidence for both P-O and P-G fit is examined in turn, before discussing the inferences for fit research as a whole.

Articles measuring P-G fit

In the included studies, P-G fit, that is, the compatibility a healthcare staff member experiences with their work group, was only measured through value congruence, whereby the similarity of values between the individual and the group are measured. All four articles identified in this category also measured similar staff outcomes, namely job satisfaction[49, 53, 64, 68] and turnover intent,[49, 53, 64] although one also measured employee attitude and time pressure.[68] In all of these articles, increased value congruence was significantly positively associated with job satisfaction, and negatively associated with intention to leave the job.[49, 53, 64, 68] However, Dotson et al. [49] counter-intuitively reported that value congruence was *positively* associated with intent to leave the entire nursing profession; the authors speculated this may have been due to a lack of fulfilment of altruistic values in the nursing field, as well as external financial or bureaucratic pressures. Overall, the four studies indicated a relationship between P-G value congruence and staff outcomes, particularly a positive relationship with job satisfaction and a negative relationship with turnover intent.

Articles measuring P-O fit

In contrast to P-G fit, P-O fit, the compatibility a healthcare staff member experiences with their organisation, was measured more frequently and in terms of various components of fit. Different ways of measuring some or all of the components were present in the 22 P-O fit articles (20 that

solely measured P-O fit and two that also measured P-G fit). **Table 4** reports on what authors purported to measure in their P-O fit studies.

[Insert Table 4 here]

Supplementary fit was the most commonly measured component of P-O fit in healthcare literature.[14, 15, 69, 70] P-O supplementary value congruence was measured in 18 studies. Seven articles measured value congruence through the Areas of Worklife Scale (AWS)[71] where "values" was one of six components the scale measured.[47, 53, 55-58, 60] Consequently, "fit" or "compatibility" was not the main focus of these articles, but they still reported the correlations with outcomes including burnout,[47, 55-58, 60] turnover intent,[58] and job satisfaction[54] in a variety of healthcare settings, including hospitals[54-56, 60] and acute care facilities.[58] The remaining survey tools measuring P-O value congruence were heterogeneous, with three studies[48, 59, 66] using the Perceived Fit Scale from Cable and DeRue [72], four studies deriving their survey questions from other sources,[52, 59, 63, 65] and five studies using tools crafted specifically for that study.[18, 49-51, 64] The heterogeneity of tools and study contexts made it difficult to compare across studies. However, collectively these studies suggested there are several valid ways to measure P-O supplementary value fit and their associations with staff outcomes.

Personality congruence was measured in two studies, one of which also measured knowledge, skills and abilities (KSA) congruence. Cha et al. [65] measured personality congruence under the heading of "prosocial P-O fit", whereby high scores on personal and prosocial identities (in other words, high personality congruence) was associated with higher organisational citizenship and caring behaviour from hospital employees. However, they reported an unexpected link between the misfit of the person and organisation with prosocial behaviour, such that an individual would be intrinsically motivated to engage in these behaviours even if the organisation did not actively

encourage them. Similarly, the study measuring P-O KSA and personality congruence found that the overall measure of P-O fit was significantly associated with both job satisfaction and turnover intention.[64] However, personality and KSA congruence were not analysed separately, so there was not enough evidence to deduce the strength of the association between each type of congruence individually with staff outcomes.

Supplementary goal congruence was measured in one study of job strain amongst aged care workers, where Schmidt [62] found that goal incongruence was related to absenteeism and self-reported burnout. As there was only one study on goal congruence, it was difficult to draw conclusions regarding this particular component of supplementary fit.

Two studies did not specify the aspect of supplementary fit that they measured. Hatton et al. [24] used an "ideal-real" organisational culture tool to test the congruence between employee's perceptions of their organisation compared to those of an "ideal" organisation. It could not be determined from the original scale which component or components of supplementary fit were examined. The second study measuring an unspecified component of supplementary fit was also the sole article reporting a measure of complementary fit. Reportedly, each fit component (supplementary and complementary) was measured through four items.[67] However, upon review of the original survey items, it became apparent that the complementary fit scale consisted of items that would be defined as different elements of fit (needs-supplies and supplementary).[73] This combination of items made it difficult to draw theoretical conclusions from the study. Although general complementary fit itself was not measured, this article indicates the potential importance of needs-supplies P-O fit.

Zhang et al. [61] reported that needs-supplies P-O fit was directly associated with job satisfaction, as well as significantly inversely associated with intent to leave among community health workers in China. These results aligned with those of Cooper-Thomas et al. [67] who reported a significant positive correlation of P-O fit with job satisfaction and organisational commitment, and

a negative correlation with intention to quit. Moreover, both studies reported that job satisfaction partially mediated the relationship between needs-supplies P-O fit and intention to quit.

Articles measuring P-O and P-G fit

There was a dearth of research examining P-O and P-G fit together in healthcare, limiting knowledge regarding their relationship. Of the two articles purporting to measure both P-O and P-G fit, it appeared that based on the items used, one rigorously measured only P-O fit,[64] and the other did not delve into the fit framework, but rather measured P-O and P-G value congruence.[49] As such, it was not possible to draw any reasonable conclusions on the potential interactional effect between P-O and P-G fit on staff outcomes in health environments.

Staff outcomes measured

In addition to the variability amongst the type of fit studied, there was also variation in the staff outcomes measured. These main outcome groups included satisfaction, intention to quit, organisational commitment, burnout, and absenteeism (**Table 5**).

[Insert Table 5 here]

Overall findings

Overall, 95.8% of included articles (23/24) reported a significant, positive relationship between P-O or P-G fit and staff outcomes, such that greater compatibility with one's workplace or organisation was associated with more positive outcomes for staff (e.g., lower levels of burnout, increased satisfaction). Of these, 18 articles reported an exclusively positive relationship, showing that the relationship between fit and each measured staff outcome was in the direction hypothesised. A further five articles reported a partially positive relationship; in other words, some staff outcomes

had a significant association with fit in the direction hypothesised, but the association with other outcomes did not reach a level of statistical significance (e.g., a reported positive association between measures of fit and job satisfaction and loyalty, but no association with turnover).[63] Finally, one article reported no significant association between the two entities (namely, P-O value fit and actual turnover).[66]

DISCUSSION

The results of this review provided robust evidence for the initial postulation that stronger P-O fit, and to a lesser extent P-G fit, would be associated with more positive outcomes, such as increased organisational commitment and job satisfaction, and decreased intent to quit, burnout, and stress. Even with a relatively small number of P-G fit articles compared with P-O fit articles, the trend across the results suggests the importance of *both* constructs in increasing an individuals' perception of fit, and that this is conducive to better staff outcomes in healthcare. Hence, this review highlights the importance for people's well-being in feeling a sense of fit with both their work-group and their wider organisation—a result that confirms previous results from systematic reviews not conducted in healthcare.[15, 74] Specifically, evidence suggests the importance of similar values between individuals and their workplace and organisation.[18, 49, 51-53, 57, 68] Not only may this have positive downstream effects on the employees themselves, but it also has the potential to positively impact on the outcomes they produce in the work environment which, in healthcare, equates to better patient care.[6]

Research regarding the process of individual adaption to the work context is growing,[75, 76] which will add richness to the understanding of how to most effectively foster perceived fit and improve cultures in healthcare settings. This review will, we hope, offer welcome guidance to policymakers, managers and other custodians of organisational culture in healthcare on the

importance of enhancing fit perceptions, which may lead to improved staff outcomes in health settings. Ultimately, such strategies aim to increase mutually beneficial fit at work.

The results have important implications for clinicians, allied health professionals, healthcare managers, and policymakers involved in the development and implementation of culture change interventions. Most apparently, they suggest the importance of individuals being motivated to seek work at organisations that hold similar values and goals to their own.[49, 77] Alternatively, in the case of employed individuals being incompatible with the workplace or organisation, the results suggest the importance of bridging this gap.[78-80] The systematic review is the first in the context of healthcare to highlight the mutual benefit of adaption and flexibility of both the individual and the environment, in order to create better fit between health care staff and the places they work, which may also potentially improve patient care.

Strengths and limitations

There are several strengths and limitations to this study. The review searched multiple databases, and was thorough and rigorous, applying PRISMA methodology, and assessing bias and quality. Bias is unavoidable, and thus readers should be mindful of this potential bias when judging the strength of evidence for the association between P-O and P-G fit with staff outcomes. Additionally, the included articles were inconsistent and heterogeneous in their labelling and measuring of fit. For example, some articles measured value congruence but did not explain the wider concept of supplementary fit,[55, 60] whilst others specified this information.[48, 66] This meant we had to make some choices regarding the identification and grouping of articles for this review. In the future, empirical studies of P-O and P-G fit in health settings could address these limitations by explicitly identifying what facet of fit they are studying, and linking this to their measurement tool.

CONCLUSION

The results of this systematic review indicate that fitting in at work is conducive to improved staff outcomes. The results argue in favour of the intrinsic benefit of improving staff well-being. Moreover, there is the potential added benefit of learning how to enhance organisational cultures, within which people fit or do not fit, which may have downstream effects on patient care.

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Tables to be inserted into manuscript

Table 1. Important definitions of the components of P-O and P-G fit

Term	Definition	Associated Key Terms
Supplementary/ similarity fit	Compatibility in which the individual and the environment are congruent (e.g., similar values, personality or goals).[15, 19]	Fit, congruence, similarity fit, compatibility
Complementary fit	Fit in which the individual or organisation fills a gap in, adds something unique to, or "makes whole" the other.[19, 21, 34]	Uniqueness
Needs-supplies fit	A feeling of fit in which the needs, inclinations or requirements of the person are fulfilled by the work environment.[15, 81]	Supplies-values fit*
Demands-abilities fit	Fit in which the individual has the capabilities and capacity to meet the demands of the environment.[15]	N.a.

Sources: [15, 19, 21, 34, 81].

*For simplicity, this term will not be used in this review to describe needs-supplies fit.

Table 2. General search strategy

Keyword	Related terms/synonyms	Alternative terms
P-O and P-G fit	Person*organisation fit OR supplementary fit OR complementary fit OR needs-supplies fit OR supplies-values fit OR demands-abilities fit OR supplementary congruence OR complementary congruence OR similarity fit OR value congruence OR goal congruence OR personality congruence OR person-group fit OR person-team fit	Organization
Healthcare context	Health organisation* OR hospital* OR health facilit* OR acute care OR primary care OR primary health care OR health context OR health setting OR health service OR health*care OR tertiary care OR nurse* OR health profession* OR doctor OR GP OR physician* OR dentist* OR health OR health care service* OR gyn*ecologist* OR h*ematologist* OR internist* OR obstetrician* OR p*ediatrician* OR pharmacist* OR physiotherapist* OR psychiatrist* OR psychologist* OR radiologist* OR surgeon* OR surgery OR therapist* OR counse*lor* OR neurologist* OR optometrist*	Health care Healthcare Health-care Organization
Staff outcomes	Burnout OR staff outcome* OR job satisfaction OR staff satisfaction OR employee satisfaction OR employee outcome* OR retention OR staff recognition OR employee recognition OR intention to stay OR	Organization

Keyword	Related terms/synonyms	Alternative terms
	intention to leave OR debrief* OR intent to turnover OR turnover intention OR organisation* commitment OR stress OR work attitude OR occupational hazard* OR collegiality OR working relationship* OR teamwork OR collaboration	

The symbol * is used by the databases to symbolise truncation.

At least one keyword was needed from each row.

For complete search strategy, please refer to **Appendix 1** in Supplementary File.

Table 3. Setting of included studies in systematic review

Study setting	Number of included studies conducted in this context
Hospitals	11[a]
Elderly care facilities	4[b]
Acute care facilities	1[c]
Ambulatory care	1[d]
Disability services	1[e]
Community health	1[f]
No contextual information	1[g]
Multiple settings	4[h]

[a][50, 52-56, 59, 60, 63, 65, 68].

[b][18, 51, 62, 66].

[c][58].

[d][47].

[e][24].

[f][61].

[g][64].

[h][48, 49, 57, 67].

Table 4. Number of studies reported for each type of P-O fit

Component of P-O fit		**Number of studies**[a]
Supplementary	Value	18
	Personality	2
	Knowledge, skills and abilities (KSA)	1
	Goal	1
	Unspecified	2
	Total	**21**[b]
Complementary		1
Needs-supplies		1
Demands-abilities		0
Total studies measuring P-O fit		**22**[c]

[a]Studies may have reported measuring additional types of fit in different aspects of the P-E paradigm (e.g., Rehfuss et al. (2012) measured needs-supplies and demands-abilities P-J fit).[48] These are not relevant to the aims of this systematic review and not reported here.

[b]The total number of articles measuring supplementary fit does not equate to the number of studies measuring each individual component of supplementary fit, as some studies measured multiple components of supplementary fit in the one study.

[c]The total number of articles measuring P-O fit does not equate to the number of studies measuring each individual component, as some studies measured multiple components of P-O fit in the one study.

Table 5. Staff outcomes assessed in the studies included in this review

Term	Alternative terms	Included articles measuring and recording this outcome[a]
Satisfaction	Job satisfaction, work satisfaction, career satisfaction	14
Intention to quit	Turnover intent, intention to stay, job search behaviour, intent to leave job, intent to leave profession, actual turnover	14
Organisational commitment	Loyalty, organisational citizenship behaviour (OCB)[b], caring behaviour	9
Burnout	N.A.	9
Stress	Time pressure, job stress, psychosomatic complaints	4
Absenteeism	Sick leave behaviour	4
Other	Eg, Self-rated health, accident propensity, employee attitude	2

[a]The total of this column does not equate to the total number of included articles, as some studies measured outcomes from more than one column.

[b]Organisational citizenship behaviour (OCB) is defined as voluntary actions undertaken by an employee and directed towards individuals or organisations. The actions may not be rewarded, but they contribute to the work environment.[65]

Figures to be inserted into manuscript

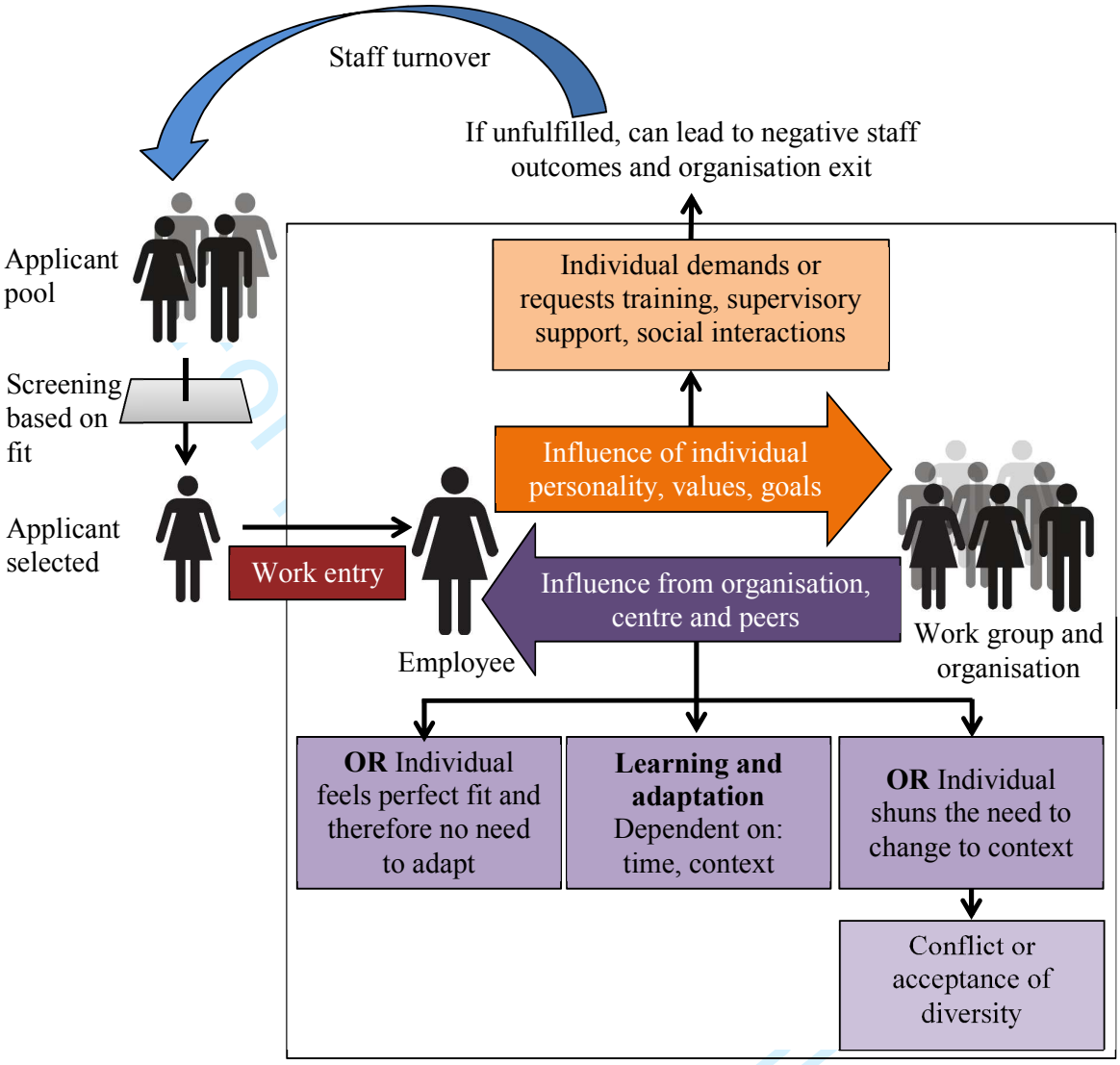
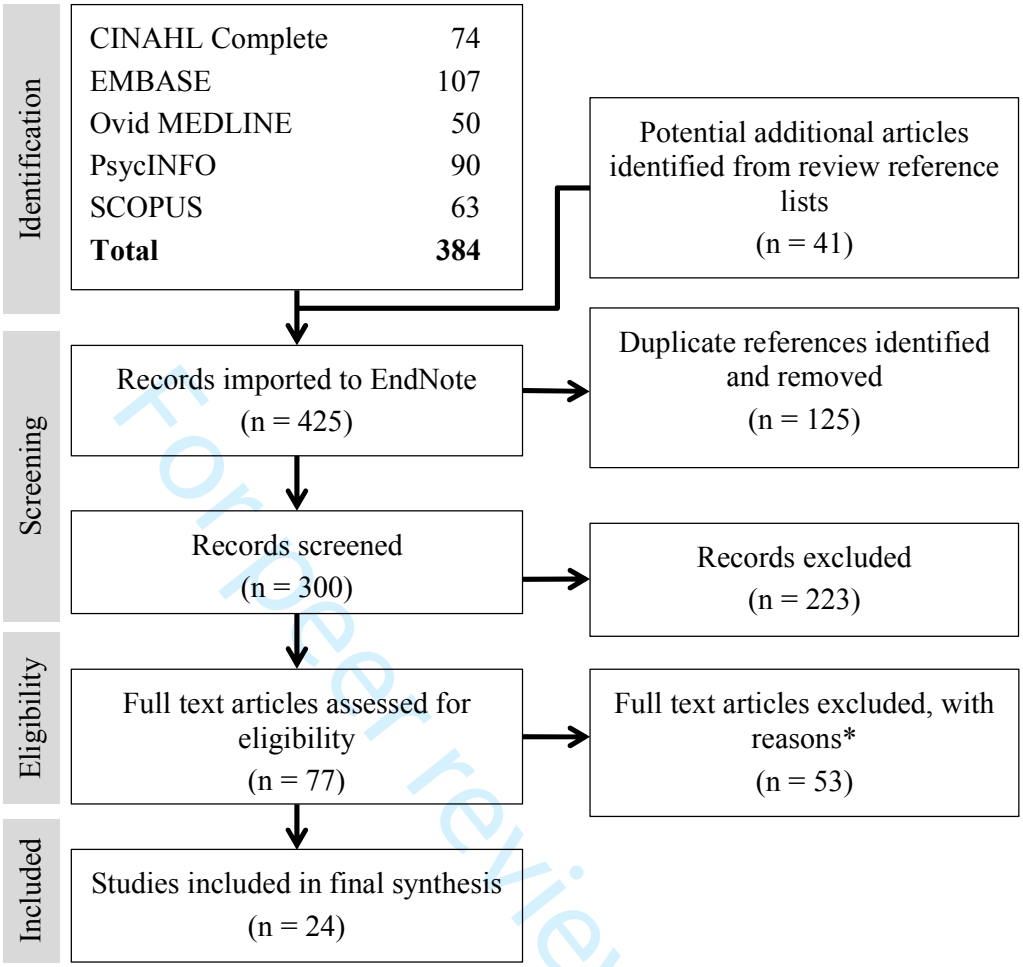


Figure 1. Rich picture modelling the process of fit and adaptation [75]



***Reason for exclusion of articles with full text review**

Reason for exclusion	Number of texts excluded for this reason[a]
Full text not available	6
Language not in English	4
Not primary empirical study	4
Not in healthcare context	31
Not peer reviewed journal article	5
Does not measure association	9

Figure 2. Search process

[a]Total for "reasons for exclusion" does not add up to the total number of articles excluded, as some articles had multiple reasons for exclusion.

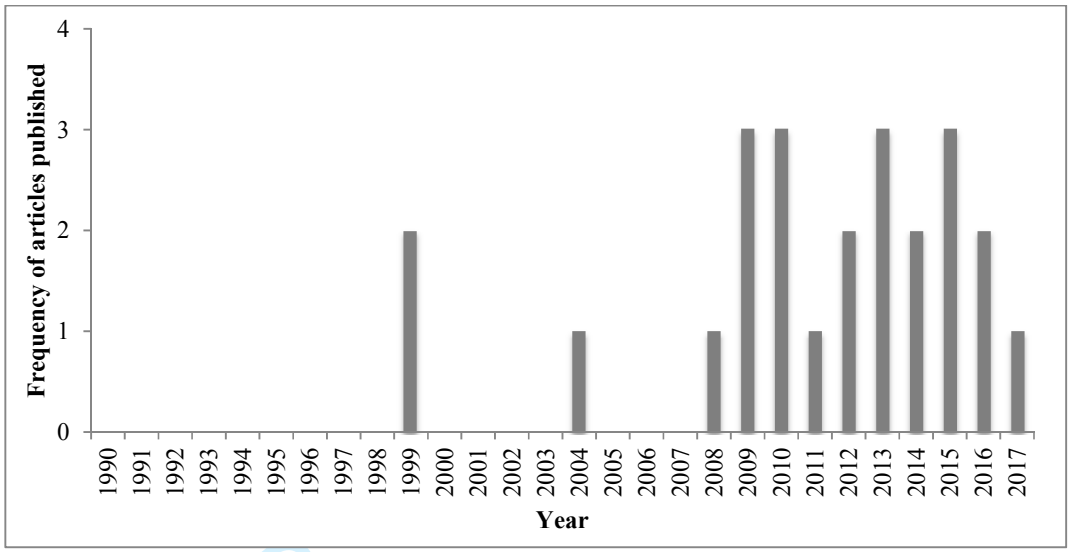


Figure 3. Trends in the frequency of published P-O and P-G fit research conducted in a health setting over time

Bars represent the number of peer-reviewed articles on this topic in the corresponding year (as established from inclusion in the systematic review).

HOW PEOPLE FIT IN AT WORK: A SYSTEMATIC REVIEW OF THE ASSOCIATION BETWEEN PERSON-ORGANISATION AND PERSON-GROUP FIT WITH STAFF OUTCOMES IN HEALTHCARE

Supplementary File

The following Supplementary File includes three appendices to complement the main document, with titles as follows:

Appendix 1: Complete Search Strategy

Appendix 2: Quality Assessment Tool Ratings of Articles Included in Systematic Review

Appendix 3: Information About Included Articles from the Systematic Review

APPENDIX 1: Complete Search Strategy

Please see below for the search terms used to complete the searches for each electronic database. These are CINAHL Complete (**Table 1**), EMBASE (**Table 2**), Ovid MEDLINE (**Table 3**), PsycINFO (**Table 4**) and SCOPUS (**Table 5**).

Table 1 CINAHL Complete search strategy

1	(MH "Job Satisfaction") OR (MH "Personnel Turnover") OR (MH "Attitude of Health Personnel+") OR (MH "Personnel Retention") OR (MH "Personnel, Health Facility+") OR (MH "Burnout, Professional+")
2	(Burnout OR staff outcome* OR job satisfaction OR staff satisfaction OR employee satisfaction OR employee outcome* OR retention OR staff recognition OR employee recognition OR intention to stay OR intention to leave OR debrief* OR intent to turnover OR turnover intention OR organi*ation* commitment OR stress OR work attitude OR occupational hazard* OR collegiality OR working relationship* OR teamwork OR collaboration)
3	1 OR 2
4	(Health organi*ation* OR hospital* OR health facilit* OR acute care OR primary care OR primary health care OR health context OR health setting OR health service OR health*care OR tertiary care or nurse* or health profession* or doctor or GP or physician* or dentist* or health or health care service* or gyn*ecologist* or h*ematologist* or internist* or obstetrician* or p*ediatrician* or pharmacist* or physiotherapist* or psychiatrist* or psychologist* or radiologist* or surgeon* or surgery or therapist* or counse*lor* or neurologist* or optometrist*)
5	(person-organi*ation fit or person organi*ation fit or supplementary fit or complementary fit or needs-supplies fit or supplies-values fit or demands-abilities fit or supplementary congruence or complementary congruence or similarity fit or value congruence or goal congruence or personality congruence or person-group fit or person-team fit)
6	3 AND 4 AND 5

Table 2. EMBASE search strategy

1	(person-organi*ation fit or person organi*ation fit or supplementary fit or complementary fit or needs-supplies fit or supplies-values fit or demands-abilities fit or supplementary congruence or complementary congruence or similarity fit or value congruence or goal congruence or personality congruence or person-group fit or person-team fit).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]
2	(person adj3 group).ti,ab.
3	(person adj3 organi*ation).ti,ab.
4	1 OR 2 OR 3
5	(Health organi*ation* or hospital* or health facilit* or acute care or primary care or primary health care or health context or health setting or health service or health*care or tertiary care or nurse* or health profession* or doctor or GP or physician* or dentist* or health or health care service* or gyn*ecologist* or h*ematologist* or internist* or obstetrician* or p*ediatrician* or pharmacist* or physiotherapist* or psychiatrist* or psychologist* or radiologist* or surgeon* or surgery or therapist* or counse*lor* or neurologist* or optometrist*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]
6	exp health care facility/

7	exp health care delivery/
8	5 OR 6 OR 7
9	(Burnout or staff outcome* or job satisfaction or staff satisfaction or employee satisfaction or employee outcome* or retention or staff recognition or employee recognition or intention to stay or intention to leave or debrief* or intent to turnover or turnover intention or organi*ation* commitment or stress or work attitude or occupational hazard* or collegiality or working relationship* or teamwork or collaboration).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]
10	Exp health personnel attitude/
11	job satisfaction/
12	stress/
13	burnout/
14	9 OR 10 OR 11 OR 12 OR 13
15	4 AND 8 AND 14

Table 3. Ovid MEDLINE search strategy

1	(person-organi*ation fit or person organi*ation fit or supplementary fit or complementary fit or needs-supplies fit or supplies-values fit or demands-abilities fit or supplementary congruence or complementary congruence or similarity fit or value congruence or goal congruence or personality congruence or person-group fit or person-team fit).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]
2	(person adj3 group).ti,ab.
3	(person adj3 organi*ation).ti,ab.
4	1 OR 2 OR 3
5	(Health organi*ation* or hospital* or health facilit* or acute care or primary care or primary health care or health context or health setting or health service or health*care or tertiary care or nurse* or health profession* or doctor or GP or physician* or dentist* or health or health care service* or gyn*ecologist* or h*ematologist* or internist* or obstetrician* or p*ediatrician* or pharmacist* or physiotherapist* or psychiatrist* or psychologist* or radiologist* or surgeon* or surgery or therapist* or counse*lor* or neurologist* or optometrist*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]
6	"Delivery of Health Care"/
7	5 OR 6
8	(Burnout or staff outcome* or job satisfaction or staff satisfaction or employee satisfaction or employee outcome* or retention or staff recognition or employee recognition or intention to stay or intention to leave or debrief* or intent to turnover or turnover intention or organi*ation* commitment or stress or work attitude or occupational hazard* or collegiality or working relationship* or teamwork or collaboration).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]
9	job satisfaction/
10	Stress, psychological/
11	Burnout, professional/
12	Personnel turnover/

13	Interprofessional relations/
14	8 OR 9 OR 10 OR 11 OR 12 OR 13
15	4 AND 7 AND 14

Table 4. PsycINFO search strategy

1	(person-organi*ation fit or person organi*ation fit or supplementary fit or complementary fit or needs-supplies fit or supplies-values fit or demands-abilities fit or supplementary congruence or complementary congruence or similarity fit or value congruence or goal congruence or personality congruence or person-group fit or person-team fit).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]
2	(person adj3 group).ti,ab.
3	(person adj3 organi*ation).ti,ab.
4	1 OR 2 OR 3
5	(Health organi*ation* or hospital* or health facilit* or acute care or primary care or primary health care or health context or health setting or health service or health*care or tertiary care or nurse* or health profession* or doctor or GP or physician* or dentist* or health or health care service* or gyn*ecologist* or h*ematologist* or internist* or obstetrician* or p*ediatrician* or pharmacist* or physiotherapist* or psychiatrist* or psychologist* or radiologist* or surgeon* or surgery or therapist* or counse*lor* or neurologist* or optometrist*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]
6	Exp health care delivery/
7	5 OR 6
8	(Burnout or staff outcome* or job satisfaction or staff satisfaction or employee satisfaction or employee outcome* or retention or staff recognition or employee recognition or intention to stay or intention to leave or debrief* or intent to turnover or turnover intention or organi*ation* commitment or stress or work attitude or occupational hazard* or collegiality or working relationship* or teamwork or collaboration).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]
9	Exp health personnel attitudes/
10	Exp job satisfaction/
11	Exp occupational stress/
12	Exp employee turnover/
13	8 OR 9 OR 10 OR 11 OR 12
14	4 AND 7 AND 13

Table 5. SCOPUS search strategy

TITLE-ABS-KEY((“person-organi*ation fit” OR “person organi*ation fit” OR “supplementary fit” OR “complementary fit” OR “needs-supplies fit” OR “supplies-values fit” OR “demands-abilities fit” OR “supplementary congruence” OR “complementary congruence” OR “similarity fit” OR “value congruence” OR “goal congruence” OR “personality congruence” OR “person-group fit” OR “person-team fit”) AND (“Health organi*ation*” OR “hospital*” OR “health facilit*” OR “acute care” OR “primary care” OR “primary health care” OR “health context” OR “health setting” OR “health service”

OR “health*care” OR “tertiary care” OR “nurse*” OR “health profession*” OR “doctor” OR “GP” OR “physician*” OR “dentist*” OR “health” OR “health care service*” OR “gyn*ecologist*” OR “h*ematologist*” OR “internist*” OR “obstetrician*” OR “p*ediatrician*” OR “pharmacist*” OR “physiotherapist*” OR “psychiatrist*” OR “psychologist*” OR “radiologist*” OR “surgeon*” OR “surgery” OR “therapist*” OR “counse*lor*” OR “neurologist*” OR “optometrist*”) AND (“Burnout” OR “staff outcome*” OR “job satisfaction” OR “staff satisfaction” OR “employee satisfaction” OR “employee outcome*” OR “retention” OR “staff recognition” OR “employee recognition” OR “intention to stay” OR “intention to leave” OR “debrief*” OR “intent to turnover” OR “turnover intention” OR “organi*ation* commitment” OR “stress” OR “work attitude” OR “occupational hazard*” OR “collegiality” OR “working relationship*” OR “teamwork” OR “collaboration”))

APPENDIX 2: Quality Assessment Tool Ratings of Articles Included in Systematic Review

Reference	Abstract and title	Introduction and aims	Method and data	Sampling	Data analysis	Ethics and bias	Results	Transferability/ generalizability	Usefulness	Total
Bao Y, Vedina R, Moodie S, and Dolan S. (2013) *Journal of Advanced Nursing.* 69(3):631-641.	4	4	4	4	4	4	4	4	4	36
Bellou V. (2009) *Employee Relations.* 31(5):455-470.	4	4	4	4	4	2	4	4	4	34
Boon C, and Biron M. (2016) *Human Relations.* 69(12):2177-2200.	4	3	4	4	4	2	3	4	4	32
Cha J, Chang YK, and Kim T-Y. (2014) *Journal of Business Ethics.* 123(1):57-69.	4	4	4	4	4	2	4	4	4	34
Cooper-Thomas HD, and Poutasi C.(2011) *Asia Pacific Journal of Human Resources.* 49(2):180-192.	4	4	4	4	4	4	4	3	4	35
Dotson MJ, Dave	3	2	2	3	3	1	3	3	3	23

Reference	Abstract and title	Introduction and aims	Method and data	Sampling	Data analysis	Ethics and bias	Results	Transferability/ generalizability	Usefulness	Total
DS, Cazier JA, and Spaulding TJ. (2014) *Journal of Nursing Administration*. 44(2):111-116.										
Findik M, Öğüt A, and Çağliyan V. (2013) *Mediterranean Journal of Social Sciences*. 4(11):434-440.	4	2	2	3	3	1	3	3	2	23
Gates MG, and Mark BA. (2012) *Research in Nursing and Health*. 35(3):265-276.	3	4	4	4	4	2	4	3	4	32
Gregory ST and Menser T. (2015) *Journal of healthcare management / American College of Healthcare Executives*. 60(2):133-148.	3	3	2	2	4	1	4	2	2	23
Hatton C, Rivers M, Mason H, et al. (1999) *Journal of Intellectual*	4	4	3	3	4	1	3	3	4	29

Reference	Abstract and title	Introduction and aims	Method and data	Sampling	Data analysis	Ethics and bias	Results	Transferability/ generalizability	Usefulness	Total
Disability Research. 43(3):206-218.										
Kalliath TJ, Bluedorn AC, and Strube MJ. (1999) *Journal of Organizational Behavior*. 20(7):1175-1198.	4	4	3	4	4	4	3	4	4	34
Leiter MP, Day A, and Price L. (2015) *Burnout Research*. 2(1):25-35.	4	2	3	3	3	4	3	4	4	30
Leiter MP, Frank E, and Matheson TJ. (2009) *Canadian Family Physician*. 55(12):1224-1226.	3	4	4	4	3	2	3	4	4	31
Leiter MP, Gascon S, and Maru'nez-Jarreta B. (2010) *Journal of Applied Social Psychology*. 40(1): 57-75.	3	4	4	4	4	3	4	4	4	34

Reference	Abstract and title	Introduction and aims	Method and data	Sampling	Data analysis	Ethics and bias	Results	Transferability/ generalizability	Usefulness	Total
Leiter MP, Jackson NJ, and Shaughnessy K. (2009) *Journal of Nursing Management*. 17(1):100-109.	4	4	4	3	4	2	4	2	4	31
Leiter MP. (2008) *Giornale Italiano di Medicina del Lavoro Ed Ergonomia*. 30(1 Suppl A):A52-58.	4	3	3	4	3	2	1	3	3	26
Rehfuss MC, Gambrell CE, and Meyer D. (2012) *The Career Development Quarterly*. 60(2):145-151.	4	4	4	3	4	4	4	3	4	34
Ren T, and Hamann DJ. (2015) *Personnel Review*. 44(4):550-566.	3	4	4	3	4	3	4	4	4	33
Ren T. (2013) *Journal of Business Ethics*. 112(2):213-224.	4	4	4	3	4	2	3	3	4	31
Risman KL, Erickson RJ, and	4	4	4	3	4	1	3	3	4	30

Reference	Abstract and title	Introduction and aims	Method and data	Sampling	Data analysis	Ethics and bias	Results	Transferability/ generalizability	Usefulness	Total
Diefendorff JM. (2016) *Applied Nursing Research*. 31:121-125.										
Schmidt KH. (2010) *International Journal of Nursing Studies*. 47(7):855-863.	4	4	4	3	3	2	4	4	4	32
Somers MJ. (2010) *Journal of Occupational and Organizational Psychology*. 83(2):443-453.	3	4	4	3	4	1	4	3	4	30
Verplanken B. (2004) *International Journal of Nursing Studies*. 41(6):599-605.	4	4	4	4	4	1	4	3	3	31
Zhang M, Yan F, Wang W, and Li G. (2017) *BMJ Open*. 7(2).	4	4	4	3	4	4	4	4	4	35

APPENDIX 3. Information About Included Articles from the Systematic Review

Reference	Study objectives/hypotheses/ research questions related to systematic review	Study design	Context; type of participants; number of participants	PO/PG fit?*; type of fit studied; findings direction; staff outcome	Key findings
Bao Y, Vedina R, Moodie S, and Dolan S. (2013) *Journal of Advanced Nursing.* 69(3):631-641.	Value incongruence will be positively related to burnout, turnover intention and accident propensity, and negatively related to self-rated health. Moreover, it was hypothesised that burnout mediates the relationship between value incongruence and self-rated health/turnover intention/accident propensity. (see p. 633-634)	Quantitative; cross-sectional	Large university hospital; nurses; 234	PO; value congruence; self-rated health, turnover intention, accident propensity, burnout; partly positive	"Of the three value axes, Economical and Ethical value incongruence are correlated with burnout. This suggests that hypothesis H1 is supported on these two axes. Moreover, Emotional and Ethical value incongruence were correlated with accident propensity. Thus, hypothesis H4a was supported on these two axes. All three types of value incongruence were correlated with turnover intention (hypothesis H3a fully confirmed), but none of them was related to health (H2a rejected)." (p. 635-636)
Bellou V. (2009) *Employee Relations*. 31(5):455-470.	"This study is an attempt to explore the effect that value congruence between employees and public organizations has on exit, voice, loyalty, and neglect (EVLN) displayed by the former … This study expects to reveal the mediating role of job satisfaction in the relationship between P-O fit and these responses." (p. 456)	Quantitative; cross-sectional	Three public hospitals; medical, nursing and administration staff; 125	PO; supplementary value congruence; exit, voice, loyalty and neglect (EVLN), and job satisfaction; partly positive	"The greater the P-O fit, the higher the job satisfaction and the loyalty. On the contrary, the relationship between P-O fit and neglect is negative whereas between P-O fit and exit and voice is non-significant." (p. 463, statistics excluded from quote)
Boon C, and Biron M. (2016) *Human Relations.* 69(12):2177-	"We examine the role of leader–member exchange in the relationship between two types of person–environment fit over	Quantitative; longitudinal	Elderly care organisation; nurses, therapists, physicians and	PO; supplementary value congruence; turnover; nil	PO fit was significantly correlated with needs-supplies and demands-abilities fit, but were not significantly correlated with actual turnover (p. 2188)

2200.	time: person–organization and person–job fit, and subsequent turnover" (p. 2177)		support staff; 160		
Cha J, Chang YK, and Kim T-Y. (2014) *Journal of Business Ethics.* 123(1):57-69.	"Hypothesis 3a Organizational citizenship and caring behavior will decrease as personal prosocial identity increases toward organizational prosocial identity and will increase as personal prosocial identity exceeds organizational prosocial identity. Hypothesis 3b Organizational citizenship and caring behavior will be higher when personal and organizational prosocial identities are both high than when both are low." (p. 61)	Quantitative; cross-sectional	104 hospitals; doctors, nurses, administrative staff; 589	PO; supplementary personality and value congruence; organizational citizenship behaviour (OCB), caring behaviour; positive	"Hypothesis 3a was supported only for OCBI and caring behavior … Hypothesis 3b was supported" (p. 64-65) OBCI=OBC towards individuals (rather than organisations)
Cooper-Thomas HD, and Poutasi C.(2011) *Asia Pacific Journal of Human Resources*. 49(2):180-192.	"Research question 1: Is PJ fit or PO fit the more important predictor of (a) job satisfaction and (b) organizational commitment? Research question 2: Which mediated path is the strongest predictor of intent to quit?" (p. 183)	Quantitative; cross-sectional	Different contexts; Pacific health care workers with various roles, eg, nursing, administration, management (heritage from a Pacific Island, have higher rates of chronic illness than other ethnic groups); 99	PO; complementary and supplementary (but it is unspecified which component of supplementary fit is being examined); job satisfaction, organisational commitment, intention to quit; positive	PO fit was significantly positively correlated with job satisfaction and organisational commitment, and significantly negatively correlated with intention to quit. Job satisfaction and organizational commitment themselves also have significant direct effects on intention to quit.
Dotson MJ, Dave DS, Cazier JA, and Spaulding TJ. (2014) *Journal of*	Measured the effect of value congruence on intention to leave the job and the nursing profession, and job satisfaction	Quantitative; cross-sectional	Various nursing contexts, eg, hospital, administration,	PO, PG; supplementary value congruence; intention to leave job, intention	As expected, value congruence was significantly positively associated with job satisfaction, and negatively associated with intention to leave the job. However

Nursing Administration. 44(2):111-116.			doctors office, school. In rural and urban environments; nurses; 861	to leave profession, job satisfaction; partly positive	unexpectedly it was also significantly *positively* associated with intention to leave the nursing profession
Findik M, Öğüt A, and Çağliyan V. (2013) *Mediterranean Journal of Social Sciences*. 4(11):434-440.	"To study the relationships between the level of person-organization fit, the level of job satisfaction, and the levels of turnover intentions." (p. 436)	Quantitative; cross-sectional	Doctors and professors working in internal medicine, surgical or basic medicine areas; health personnel; 128	PO, PG; PO: supplementary value congruence, knowledge, skills and abilities (KSAs), personality. PG: supplementary value congruence; job satisfaction, turnover intent; positive	The study reported a statistically significant relationship between PO fit and both job satisfaction and turnover intent
Gates MG, and Mark BA. (2012) *Research in Nursing and Health*. 35(3):265-276.	"The greater the diversity based on values, the more negative the outcomes." (p. 267)	Quantitative; longitudinal	Participants included in the final study worked in 239 units from 133 hospitals; nurses; 1,450	PG; supplementary value congruence; job satisfaction, intent to stay; positive	"The less similar nurses perceived themselves to be relative to others in their unit in terms of values (eg, greater perceived value diversity), the less likely they were to be satisfied with their jobs and the less likely they were to report intent to stay in their current position" (p. 272)
Gregory ST and Menser T. (2015) *Journal of healthcare management / American College of Healthcare Executives*. 60(2):133-148.	"This study is an opportunity to develop and test the theory for burnout in the primary care setting; specifically, it will determine the applicability of the AWS model in measuring burnout for primary care physicians." (p. 137)	Quantitative; longitudinal	Ambulatory units: primary care physicians; 153 (97 at baseline, 91 at the 3-month follow-up, and 56 at the final 6-month follow-up) representing 244 total responses	PO; supplementary value congruence; burnout; positive	It was reported that values were significantly association with all three aspects of burnout (emotional exhaustion, depersonalization, and self-efficacy, which is defined as the level of personal accomplishment one feels with respect to their work).[2,13,14]

Hatton C, Rivers M, Mason H, et al. (1999) *Journal of Intellectual Disability Research*. 43(3):206-218.	"To investigate relationships between person± organization `fit' and staff outcomes. If the theory is correct, greater person±organization 'fit' should be associated with better staff outcomes across a range of indices." (p. 43)	Quantitative; cross-sectional	UK services for people with intellectual disabilities (village, community residential, education and community teams); staff at all levels, eg, administrative, domestic, managerial and therapeutic staff; 450	PO; NA; job stress, job search behaviour, intention to leave, sick leave behaviour, work satisfaction; partly positive	"Higher levels of general stress were strongly associated with poorer person-organization fit on the organization culture dimension of tolerant/ staff-oriented. Greater job strain was strongly associated with poorer person-organization fit on four dimensions ... Intention to leave was strongly associated with poorer person-organization fit on four organizational culture dimensions ... Actual job search behaviour and sick leave in the previous 6 months were not strongly associated with any dimension of organizational culture. Finally, higher levels of work satisfaction were very strongly associated with better person-organization fit on all nine dimensions of organizational culture" (p. 43)
Kalliath TJ, Bluedorn AC, and Strube MJ. (1999) *Journal of Organizational Behavior*. 20(7):1175-1198.	"The greater the congruence between individuals' (a) internal process (b) open systems (c) human relations, and (d) rational goal values and their perceptions of (a) internal process (b) open systems (c) human relations, and (d) rational goal values in the organization, respectively, the higher their levels of organizational commitment ... [and] job satisfaction" (p. 1181)	Quantitative; cross-sectional	Two hospitals; executives, middle managers, first-line supervisors, employees, resident physicians, contract workers; 1358	PO; value congruence; job satisfaction, organisational commitment; positive	There were significant positive intercorrelations between value congruence on the one hand, and job satisfaction and organisational commitment on the other. Moreover, "These results indicate weak support for the four congruence hypotheses predicting organizational commitment ... [and] predicting job satisfaction" (p. 1189)
Leiter MP, Day A, and Price L. (2015) *Burnout Research*. 2(1):25-35.	"To examine the contribution of attachment dimensions to predicting burnout beyond measures of workload, value congruence, and coworker incivility" (p. 31-32)	Quantitative; cross-sectional	Hospital; managers and front-line staff from many professions; 1624	PO; supplementary value congruence; burnout; positive	"The contribution of attachment styles to a model of burnout based on workload and value congruence emphasizes the importance of considering employees' understanding of their social context" (p.34) … value congruence was significantly associated with all other variables

Leiter MP, Frank E, and Matheson TJ. (2009) *Canadian Family Physician*. 55(12):1224-1226.	"Values and manageable workload would interact differently for women and men when predicting burnout." (p. 1225.e1)	Quantitative; cross-sectional	NA (online survey); physicians; 2536	PO; supplementary value congruence; burnout; positive	"Values congruence predicted exhaustion and cynicism for men and women (P = .001)" (p. 1225e2) … "The results also confirmed that workload and values congruence interact differently for women and men." (p. 1225e4)
Leiter MP, Gascon S, and Maru'nez-Jarreta B. (2010) *Journal of Applied Social Psychology*. 40(1): 57-75.	"The study evaluates a structural equation model in which the three aspects of burnout— exhaustion, cynicism, and efficacy—mediate the relationship of the work environment with employees' evaluation of organizational change" (p. 57)	Quantitative; cross-sectional	Three hospitals in northern and Eastern Spain; nurses and physicians; 874; 603	PO; value congruence; burnout; positive	There was a significant negative correlation for both doctors and nurses value congruence with exhaustion and cynicism (components of burnout), and a significantly positive correlation with efficacy. (p. 66) … "Second, value congruence was significantly related to all three aspects of relationships with work. The path from values to cynicism was relatively small in the modified model, indicating that most of that relationship was mediated through exhaustion in light of the large zero-order correlation between the two constructs. They are clearly related, but much of that relationship is associated with the energetic process captured by exhaustion. Together, the analysis supports the core constructs of the model." (p. 70)
Leiter MP, Jackson NJ, and Shaughnessy K. (2009) *Journal of Nursing Management*. 17(1):100-109.	Authors expected there would be "a more powerful relationship of work values with generation than with organizational tenure. This contrast is central to the study's focus on generation as a value position: the important point is not simply a nurses' age or job tenure, but the inherent generational values." (p. 103)	Quantitative; cross-sectional	Acute care facilities; nurses; 667	PO; supplementary value congruence; burnout, turnover intent; positive	"The analysis identified a greater person/organization value mismatch for Generation X nurses than for Baby Boomer nurses. Their greater value mismatch was associated with a greater susceptibility to burnout and a stronger intention to quit for Generation X nurses." (p. 100)

Leiter MP. (2008) *Giornale Italiano di Medicina del Lavoro Ed Ergonomia*. 30(1 Suppl A):A52-58.	To test "the extent to which value congruence enhances the prediction of burnout beyond the prediction provided by demands and resources." (p. A52)	Quantitative; cross-sectional	Tertiary hospitals, regional hospitals, community hospitals and other settings; nurses; 725	PO; value congruence; burnout; positive	There was a significant correlation between value congruence and each dimension of burnout … For further analysis, "Only two correlated error terms were freed in the analysis: MBI-3 with MBI-4 and Control-1 with Control-2." (p. A56) So values were not analysed in results.
Rehfuss MC, Gambrell CE, and Meyer D. (2012) *The Career Development Quarterly*. 60(2):145-151.	"We hypothesized that each type of fit would be positively related to counselor career satisfaction." (p. 146)	Quantitative; cross-sectional	Various counselling and counselling education contexts; counsellors; 437	PO; supplementary value congruence; career satisfaction; positive	"P-O and N-S fit were both positively related to career satisfaction, and no relationship was found between career satisfaction and D-A fit." (p. 149) Please note, N-S and D-A fit were measured for person-job fit, and are not considered further for this systematic review
Ren T, and Hamann DJ. (2015) *Personnel Review*. 44(4):550-566.	Examine how employee-organisation value congruence was related to the staff outcomes of satisfaction, turnover intent and organisational commitment at different levels of nursing.	Quantitative; cross-sectional	Nursing homes; nurses; 562	PO; supplementary value congruence; satisfaction, turnover intent and organisational commitment; positive	"Value congruence is found positively associated with nurses' job satisfaction and organizational commitment, but negatively with turnover intention." (p. 550)
Ren T. (2013) *Journal of Business Ethics*. 112(2):213-224.	"Organizational ownership moderates the relationship between employee–organization value congruence and employees' (a) job satisfaction, (b) organizational commitment, and (c) intent to quit in a way that the effect is stronger among for-profit employees in comparison to the nonprofit counterparts." (p. 215)	Quantitative; cross-sectional	23 non-profit and 7 for-profit nursing homes; registered nurses, licenced practicing nurses, certified nursing assistants; 407	PO; value congruence; Job satisfaction, Organisational commitment, intention to quit; positive	"Employees' value congruence has a positive relationship with employees' self-rating on job satisfaction ($p < 0.01$, two-tailed test), organizational commitment ($p < 0.01$, two-tailed test), and a negative relationship with intent to quit ($p < 0.01$, two-tailed test) ... in general, value congruence improves the three aspects of job attitudes across different ownership types of organization, and among two out of the three cases the effect appears to be stronger in for-profit organizations" (p. 221-222)

Risman KL, Erickson RJ, and Diefendorff JM. (2016) *Applied Nursing Research*. 31:121-125.	"This study investigates the relationship of perceived value congruence with ... job satisfaction … [it is hypothesised that] value congruence will be positively related to nurses' job satisfaction." (p. 122)	Quantitative; cross-sectional	Hospital; nurses; 753	PO; supplementary value congruence (although one item unintentionally measures goal congruence); job satisfaction; positive	Perceived value congruence was significantly correlated with job satisfaction
Schmidt KH. (2010) *International Journal of Nursing Studies*. 47(7):855-863.	"Goal incongruence is expected to be positively related to indicators of job strain." (p. 857)	Quantitative; longitudinal	Six nursing homes; employees in the nursing homes; 242	PO; goal congruence; burnout, psychosomatic complaints, absenteeism; positive	Goal incongruence was significantly correlated with all outcome variables … "the results show that the perceived mismatch between personal and organizational goals is positively related to a broad spectrum of indicators of strain that includes both self-report measures (exhaustion, depersonalization, psychosomatic complaints) and measures of absenteeism covering a period of 12 months after the administration of questionnaires." (p. 860)
Somers MJ. (2010) *Journal of Occupational and Organizational Psychology*. 83(2):443-453.	"The level of person–organization value congruence for highly committed employees, those with an AC–NC dominant profile, and those with an AC dominant profile is significantly greater than is the level of person–organization value congruence for the other commitment profiles." (p. 447). AC=affective commitment; NC=normative commitment	Quantitative; longitudinal	Hospital in an urban area; employees directly involved in patient care; 572	PO; supplementary value congruence; organisational commitment, turnover intent, turnover, absenteeism; partly positive	Value congruence was significantly correlated with affective and normative commitment, turnover intention and turnover, but not absenteeism. The P-O fit hypothesis was supported such that "the AC–NC dominant profile had the highest levels of person-organization value- congruence followed by highly committed employees and those with an AC dominant profile. Although, the ordering of the means was as expected, it should be noted that the difference between highly committed employees and those with an AC dominant profile was not statistically significant." (p. 450)

Verplanken B. (2004) *International Journal of Nursing Studies*. 41(6):599-605.	"The present study addressed the question how value congruence relates to job satisfaction" (p. 600)	Quantitative; cross-sectional	Hospital surgery ward; nurses; 56	PG; value congruence; job satisfaction, employee attitude, time pressure; positive	"It was expected that job satisfaction would be predicted by ward attitudes. The correlation between these two variables was indeed the largest, but human relations and rational goal value congruence were also significantly correlated with job satisfaction." (p. 602) ... human relations value congruence was significantly correlated with ward attitude ($p<.001$) and job satisfaction ($p<.05$) (p. 603)
Zhang M, Yan F, Wang W, and Li G. (2017) *BMJ Open*. 7(2).	"This study aims to examine the mediation effect of job satisfaction on the relationship between P-O fit and turnover intention" (p. 1)	Quantitative; cross-sectional	Community health facility; community health workers; 656	PO; needs-supplies; turnover intent, job satisfaction; positive	PO fit was significantly positively associated with job satisfaction, and inversely correlated with turnover intent.

*Included studies may have also measured other types of P-E fit eg, P-J or P-V fit, but this was not reported in this table as it is unrelated to the aims of the systematic review.

PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2-6
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	4-6
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	5-7
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	n.a.
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	6-8
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	6-8
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	6-8
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	7-9
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	7-9
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	6-9
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	8
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	n.a.
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	n.a.

PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	8-9
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	n.a.
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	8-9
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	10-14
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	8-9
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	10-14
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	n.a.
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	8-9
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	n.a.
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	14-15
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	15
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	16
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	3

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

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How people fit in at work: A systematic review of the association between person-organisation and person-group fit with staff outcomes in healthcare

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HOW PEOPLE FIT IN AT WORK: A SYSTEMATIC REVIEW OF THE ASSOCIATION BETWEEN PERSON-ORGANISATION AND PERSON-GROUP FIT WITH STAFF OUTCOMES IN HEALTHCARE

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ABSTRACT

Objectives: People interact with their work environment through being, to a greater or lesser extent, compatible with aspects of their setting. This interaction between person and environment is particularly relevant in healthcare settings where compatibility affects not only the healthcare professionals, but also potentially the patient. One way to examine this association is to investigate person-organisation (P-O) fit, and person-group (P-G) fit. This systematic review aimed to identify and synthesise knowledge on both P-O and P-G fit in healthcare to determine their association with staff outcomes. It was hypothesised that there would be a positive relationship between fit and staff outcomes, such that the experience of compatibility and 'fitting in' would be associated with better staff outcomes.

Design: A systematic review was conducted based on an extensive search strategy guided by PRISMA to identify relevant literature.

Data Sources: CINAHL Complete, EMBASE, Ovid MEDLINE, PsycINFO and Scopus.

Eligibility Criteria: Articles were included if they were empirical studies, published in peer-reviewed journals in English language, set in a healthcare context, and addressed the association that staff outcomes have to P-O and/or P-G fit.

Data Extraction and Synthesis: Included texts were examined for study characteristics, fit constructs examined, and types of staff outcomes assessed. The Quality Assessment Tool was used to assess risk of bias.

Results: Twenty-eight articles were included in the review. Of these, 96.4% (27/28) reported a significant, positive association between perception of fit and staff outcomes in healthcare contexts, such that a sense of compatibility had various positive implications for staff, including job satisfaction and retention.

Conclusion: Although the results, as with all systematic reviews, are prone to bias and definitional ambiguity, they are still informative. Generally, the evidence suggests an association between

employees' perceived compatibility with the workplace or organisation and a variety of staff outcomes in healthcare settings.

ARTICLE SUMMARY

Strengths and Limitations of the study

- Systematic review is specific to healthcare, addressing a gap in the literature and informing health professionals.
- Focus specifically on the components of person-environment fit that contribute to organisational and workplace culture in healthcare settings.
- Results of this review can be leveraged to inform improvements in staff outcomes.
- The body of literature is relatively small, the review may have benefited from a broader search strategy to incorporate articles that used different terminology.

Competing Interests

The authors have no conflicts of interest to disclose.

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Contributorship Statement

JH conceptualised and drafted the manuscript. JH, KC and CP were involved in the search strategy and data extraction. KC, LAE and JB edited the manuscript and critically reviewed its intellectual content. All authors approve of the final version of the manuscript.

Patient and Public Involvement

Patients and public were not involved in this research.

Data Sharing Statement

No additional data available.

HOW PEOPLE FIT IN AT WORK: A SYSTEMATIC REVIEW OF THE ASSOCIATION BETWEEN PERSON-ORGANISATION AND PERSON-GROUP FIT WITH STAFF OUTCOMES IN HEALTHCARE

Understanding how people fit into their environment is a key aspect to understanding organisational and workplace cultures.[1-3] Research increasingly attempts to make sense of how shared attitudes, values, beliefs and practices can have downstream effects on outcomes such as productivity and staff retention.[4, 5] In healthcare contexts, culture holds consequences for both staff and patients.[2, 6] Uniquely, the presence of patients and the caring role of health providers creates an important point of departure from other contexts. Thus, we need to understand how people interact with their environment, and how culture improvement strategies can be more efficiently and sustainably implemented in the light of this knowledge.[7-12]

The person-environment (P-E) fit paradigm provides one such research avenue to further understand culture, focusing on *how people perceive themselves in relation to their work environment*. The P-E fit theory describes the compatibility of the individual and an aspect of their work context; for example, fit between the person and the work group (P-G fit) or organisation (P-O fit).[13-15] P-E fit research measures the interacting individual and contextual factors that determine the compatibility of an individual employee with aspects of his or her environment. Components of the environment (e.g., the organisation, the job) are studied separately, as it is postulated they may have different effects on staff outcomes.[16] In this theory, *fit* is defined as a sense of belonging where: 1) at least one entity (e.g., the person) fulfils the needs of the other (e.g., the organisation); 2) the entities share similar characteristics; or 3) both 1) and 2) occur.[15] **Table 1** offers definitions of the commonly identified components of P-E fit (including supplementary, complementary, needs-supplies and demands-abilities fit) in the literature.

Table 1. Important definitions of the components of P-O and P-G fit

Term	Definition	Associated Key Terms
Supplementary/ similarity fit	Compatibility in which the individual and the environment are congruent (e.g., similar values, personality or goals).[15, 17]	Fit, congruence, similarity fit, compatibility
Complementary fit	Fit in which the individual or organisation fills a gap in, adds something unique to, or "makes whole" the other.[17-19]	Uniqueness
Needs-supplies fit	A feeling of fit in which the needs, inclinations or requirements of the person are fulfilled by the work environment.[15, 20]	Supplies-values fit*
Demands-abilities fit	Fit in which the individual has the capabilities and capacity to meet the demands of the environment.[15]	N.a.

Sources: [15, 17-20].

*For simplicity, this term will not be used in this review to describe needs-supplies fit.

Past reviews of P-E fit, although useful in highlighting the relevance of the topic, have limited utility to healthcare specifically, because of its unique siloed culture and reputation for tribalism, leading to increased burnout compared to other workplaces.[1, 3, 6, 21] Most previous reviews synthesised information from across other industries.[22] While there have been quite a range of studies investigating P-E specifically in healthcare settings (such as hospitals,[23] pharmaceutical distribution firms,[22] and elderly care facilities,[24]) examining outcomes more typically associated with caring work (e.g., burnout), these findings have not yet been rigorously synthesised.[15, 17, 19, 25] This could be of importance to healthcare providers, researchers, and policymakers in order to

more clearly understand the components of change and improvement in the organisation and workplace.

Additionally, past systematic reviews on the fit concept have tended to focus exclusively on compatibility between employees and one element of their environment, such as the person-organisation (P-O) or person-group (P-G) fit,[15, 17, 25] or alternatively examined P-E fit as a whole, without differentiation of environmental components.[14] These approaches do not account for the possible interactions among different types of fit (i.e., evidence suggests that employees may simultaneously experience different levels of fit with their organisation and their work group).[26]

In research investigating P-E fit, one of the most important downstream effects to consider is the impact of fit perceptions on the staff themselves. Although the aim of studying organisational culture in healthcare is often ultimately to improve patient outcomes, employees are the first point of reference in attempts to alter, modify and ultimately transform organisational culture.[27-34] Staff outcomes are particularly important to understand in healthcare settings because of frequent reports of employee burnout, stress, intent to leave and turnover (see **Figure 1** for a graphical depiction).[18, 35-38] By first understanding the factors, such as P-E fit that influence these outcomes in healthcare settings, initiatives may be developed to improve staff well-being or reduce, for example, negative organisational cultures.[27-34]

[Insert Figure 1 here]

In the present systematic review, available evidence for the compatibility of staff with the culture of their organisation or workplace, and the effect of this compatibility on staff outcomes, is examined for the first time in healthcare settings. Because of their respective applicability to organisational and workplace cultures, it was decided that both P-O and P-G fit would be examined. Therefore, the aim of this systematic review was to *identify and synthesise knowledge on both P-O and P-G fit in*

healthcare settings to determine their association with staff outcomes. It was postulated that the majority of studies would show a positive relationship between fit and staff outcomes, such that increased fit would be associated with more positive outcomes for staff.

METHODS

Eligibility criteria

The inclusion criteria consisted of five points that needed to be satisfied for an article to be included in the review. These were: 1) must be published in English language; 2) set in a healthcare context; 3) published in a peer-reviewed journal; 4) empirical research; and 5) addresses the association of staff outcomes with P-O and/or P-G fit. Articles were excluded if they did not meet all five criteria. All types of "healthcare" settings were eligible for inclusion in the review, encompassing any front-line clinical environment where health professionals (including medical staff, nurses, allied health professionals, paramedics and pharmacists) directly interact with patients, residents, or consumers.[2] Additionally, all types of empirical studies were considered, including longitudinal and cross-sectional analysis, quantitative, qualitative and mixed-methods designs. Each of these methods, if conducted in a valid and rigorous way, had the potential to provide insights by which to address the study's aim.

Information sources

Relevant databases were identified for searching: CINAHL Complete, EMBASE, Ovid MEDLINE, PsycINFO and Scopus. The general search strategy (**Table 2**) was cross-checked with related systematic reviews to ensure relevant keywords were incorporated.[4, 5] The strategy aimed to include different components within P-G and P-O fit. Hence, the strategy encompassed general terms (e.g., "person-organisation fit") as well as more specific terms (e.g., "supplementary").[15, 17] The search strategy also endeavoured to identify staff outcomes, including but not limited to work

attitude,[25, 39] staff satisfaction,[33] burnout,[29-31] work stress,[28, 32, 40, 41] and organisational commitment.[34]

Table 2. General search strategy

Keyword	Related terms/synonyms	Alternative terms
P-O and P-G fit	Person*organisation fit OR supplementary fit OR complementary fit OR needs-supplies fit OR supplies-values fit OR demands-abilities fit OR supplementary congruence OR complementary congruence OR similarity fit OR value congruence OR goal congruence OR personality congruence OR person-group fit OR person-team fit	Organization
Healthcare context	Health organisation* OR hospital* OR health facilit* OR acute care OR primary care OR primary health care OR health context OR health setting OR health service OR health*care OR tertiary care OR nurse* OR health profession* OR doctor OR GP OR physician* OR dentist* OR health OR health care service* OR gyn*ecologist* OR h*ematologist* OR internist* OR obstetrician* OR p*ediatrician* OR pharmacist* OR physiotherapist* OR psychiatrist* OR psychologist* OR radiologist* OR surgeon* OR surgery OR therapist* OR counse*lor* OR neurologist* OR optometrist*	Health care Healthcare Health-care Organization
Staff outcomes	Burnout OR staff outcome* OR job satisfaction OR staff satisfaction OR employee satisfaction OR employee	Organization

Keyword	Related terms/synonyms	Alternative terms
	outcome* OR retention OR staff recognition OR employee recognition OR intention to stay OR intention to leave OR debrief* OR intent to turnover OR turnover intention OR organisation* commitment OR stress OR work attitude OR occupational hazard* OR collegiality OR working relationship* OR teamwork OR collaboration	

The symbol * is used by the databases to symbolise truncation.

At least one keyword was needed from each row.

The initial search was conducted on April 3, 2017, and then updated on January 22, 2019 to include articles published up until the end of 2018. The results were imported into EndNote by JH, who then deleted duplicate articles.[42] Additionally, snowballing was conducted as systematic, narrative, or scoping reviews were identified and their reference lists searched for other potential articles to include. The reference lists of included articles were subject to the same process. For the complete search strategy, please see **Appendix 1**.

Selection and data collection process

Guided by the Preferred Reporting Items for Systematic review and Meta-Analyses (PRISMA) statement,[43] an initial title and abstract review was completed by JH based on the inclusion criteria (must be published in English language, be set in a healthcare context, be published in a peer-reviewed journal article by the end of 2018, and must addresses the association between staff outcomes and P-O and/or P-G fit). Two authors (JH and CP) independently reviewed 10% of the EndNote Library, and then discussed results until consensus was reached.[44] A full text review was

then conducted by JH. Results were summarised and synthesised. Included articles were sorted according to the data type, setting, staff outcomes measured, and types of fit studied.

Data items

Information from each included study was extracted, including their aims, methods (qualitative, quantitative or mixed-method; cross-sectional or longitudinal), results and conclusions. The staff outcomes and type of fit studied was also recorded. Definitions of fit components were compared to the definitions of this systematic review, and any discrepancies were recorded.

Bias

It was anticipated that there would be biases in individual studies. The Quality Assessment Tool[45] was used to assess the bias and quality across nine categories. Each category was rated on a four-point scale (from 1="very poor" to 4="good") to create a total score, with higher scores denoting higher quality.[6, 46] For example, to receive a "good" rating for the "abstract and title" category, an article required a clear title and structured abstract including all necessary information to understand the article.[45] JH classified each article, to ensure consistency and decrease variability. The classification system quality grades facilitates the categorisation of articles as low (9-23 points), medium (24-29 points) and high (30-36 points).[47] There was also possible bias in the type of results published, for example, publication bias.[48]

RESULTS

Study selection

Four hundred and ninety-eight articles were identified from the database search and snowballing techniques. Once duplicates were removed, 10% of the EndNote Library was subject to the double screening by two authors with a Cohen's Kappa statistic of 0.61, indicating a moderate level of

agreement.[49, 50] Two hundred and seventy-three texts did not meet the inclusion criteria, and the remaining 92 articles were subjected to full-text review (**Figure 2**). Ultimately, 28 articles were included in the review.

[Insert Figure 2 here]

Risk of bias in individual studies

Based on the Quality Assessment Tool,[45] the included articles scored between 23-36 points out of a potential 36 points. In this study, there were three low, two medium and 23 high quality articles.[6] For complete classification of each article, see **Appendix 2** in the Supplementary File.

Study characteristics

The articles in the final analysis originated from multiple countries, including nine from the United States of America (USA),[24, 51-58] four from Canada,[59-62] two from Spain,[63, 64] China,[65, 66] and Korea,[67, 68] and one each from Italy,[69] France,[70] Germany,[71] Greece,[72] Turkey,[73] Korea,[67] the Netherlands,[74] New Zealand,[75] Norway,[76] and the United Kingdom.[27] There were also differences in the study setting, though the largest proportion of research was conducted in hospitals (46%) (**Table 3**).

Table 3. Setting of included studies in systematic review

Study setting	Number of included studies conducted in this context
Hospitals	13 [54, 56-60, 63, 64, 67, 69, 70, 72, 76].
Elderly care facilities	4 [24, 55, 71, 74].
Acute care facilities	1 [62].
Ambulatory care	1 [51].

Disability services	1 [27].
Community health	1 [65].
No contextual information	2 [66, 73].
Multiple settings	5 [52, 53, 61, 68, 75].

The included studies differed in their design. Of the 28 articles, five were longitudinal,[51, 54, 57, 71, 74] and the remaining 23 were cross-sectional. The sample size varied considerably, from 56[76] to 19,149 participants.[61, 66] Additionally, the type of participants varied. The most commonly recruited participants were nurses, followed by physicians. Further information about the specific characteristics of each study is reported in **Appendix 3** of the Supplementary File.

Trends in publication of the included articles provide an insight into the potential of future research examining fit in healthcare. Only two of the 28 included articles were published before the year 2000, with the majority being published after 2010 (**Figure 3**).

[Insert Figure 3 here]

Synthesis of results

Twenty-four articles exclusively measured P-O fit, two measured P-G fit, and two measured both P-O and P-G fit. The articles measuring P-G fit measured only supplementary value congruence. On the other hand, P-O fit articles measured various components of fit. The strength of the evidence for both P-O and P-G fit is examined in turn, before discussing the inferences for fit research as a whole.

Articles measuring P-G fit

In the included studies, P-G fit, that is, the compatibility a healthcare staff member experiences with their work group, was only measured through value congruence, whereby the similarity of values

between the individual and the group are measured. All four articles identified in this category also measured similar staff outcomes, namely job satisfaction[53, 57, 73, 76] and turnover intent,[53, 57, 73] although one also measured employee attitude and time pressure.[76] In all of these articles, increased value congruence was significantly positively associated with job satisfaction, and negatively associated with intention to leave the job.[53, 57, 73, 76] However, Dotson et al. [53] counter-intuitively reported that value congruence was *positively* associated with intent to leave the entire nursing profession; the authors speculated this may have been due to a lack of fulfilment of altruistic values in the nursing field, as well as external financial or bureaucratic pressures. Overall, the four studies indicated a relationship between P-G value congruence and staff outcomes, particularly a positive relationship with job satisfaction and a negative relationship with turnover intent.

Articles measuring P-O fit

In contrast to P-G fit, P-O fit, the compatibility a healthcare staff member experiences with their organisation, was measured more frequently and in terms of various components of fit. Different ways of measuring some or all of the components were present in the 26 P-O fit articles (24 that solely measured P-O fit and two that also measured P-G fit). **Table 4** reports on what authors purported to measure in their P-O fit studies.

Table 4. Number of studies reported for each type of P-O fit

Component of P-O fit		Number of studies[a]
Supplementary	Value	22
	Personality	2
	Knowledge, skills and abilities (KSA)	1
	Goal	1
	Unspecified	2
	Total	**25**[b]
Complementary		1
Needs-supplies		1
Demands-abilities		0
Total studies measuring P-O fit		**26**[c]

[a]Studies may have reported measuring additional types of fit in different aspects of the P-E paradigm (e.g., Rehfuss et al. (2012) measured needs-supplies and demands-abilities P-J fit).[52] These are not relevant to the aims of this systematic review and not reported here.

[b]The total number of articles measuring supplementary fit does not equate to the number of studies measuring each individual component of supplementary fit, as some studies measured multiple components of supplementary fit in the one study.

[c]The total number of articles measuring P-O fit does not equate to the number of studies measuring each individual component, as some studies measured multiple components of P-O fit in the one study.

Supplementary fit was the most commonly measured component of P-O fit in healthcare literature.[14, 15, 77, 78] P-O supplementary value congruence was measured in 22 studies. Eight articles measured value congruence through the Areas of Worklife Scale (AWS)[79] where "values"

was one of six components the scale measured.[51, 57, 59-62, 64, 66, 69] Consequently, "fit" or "compatibility" was not the main focus of these articles, but they still reported the correlations with outcomes including burnout,[51, 59-62, 64] turnover intent,[62] and job satisfaction[58] in a variety of healthcare settings, including hospitals[58-60, 64] and acute care facilities.[62] The remaining survey tools measuring P-O value congruence were heterogeneous, with five studies[52, 63, 68, 70, 74] using the Perceived Fit Scale from Cable and DeRue [80], five studies deriving their survey questions from other sources,[56, 63, 66, 67, 72] and five studies using tools crafted specifically for that study.[24, 53-55, 73] The heterogeneity of tools and study contexts made it difficult to compare across studies. However, collectively these studies suggested there are several valid ways to measure P-O supplementary value fit and its associations with staff outcomes.

Personality congruence was measured in two studies, one of which also measured knowledge, skills and abilities (KSA) congruence. Cha et al. [67] measured personality congruence under the heading of "prosocial P-O fit", whereby high scores on personal and prosocial identities (in other words, high personality congruence) was associated with higher organisational citizenship and caring behaviour from hospital employees. However, they reported an unexpected link between the misfit of the person and organisation with prosocial behaviour, such that an individual would be intrinsically motivated to engage in these behaviours even if the organisation did not actively encourage them. Similarly, the study measuring P-O KSA and personality congruence found that the overall measure of P-O fit was significantly associated with both job satisfaction and turnover intention.[73] However, personality and KSA congruence were not analysed separately, so there was not enough evidence to deduce individual associations between each type of and staff outcomes.

Supplementary goal congruence was measured in one study of job strain amongst aged care workers, where Schmidt [71] found that goal incongruence was related to absenteeism and self-reported burnout. As there was only one study on goal congruence, it was difficult to draw conclusions regarding this particular component of supplementary fit.

Two studies did not specify the aspect of supplementary fit that they measured. Hatton et al. [27] used an "ideal-real" organisational culture tool to test the congruence between employee's perceptions of their organisation compared to those of an "ideal" organisation. It could not be determined from the original scale which component or components of supplementary fit were examined. The second study measuring an unspecified component of supplementary fit was also the sole article reporting a measure of complementary fit. Reportedly, each fit component (supplementary and complementary) was measured through four items.[75] However, upon review of the original survey items, it became apparent that the complementary fit scale consisted of items that would be defined as different elements of fit (needs-supplies and supplementary).[81] This combination of items made it difficult to draw theoretical conclusions from the study. Although general complementary fit itself was not measured, this article indicates the potential importance of needs-supplies P-O fit.

Zhang et al. [65] reported that needs-supplies P-O fit was directly associated with job satisfaction, as well as significantly inversely associated with intent to leave among community health workers in China. These results aligned with those of Cooper-Thomas et al. [75] who reported a significant positive correlation of P-O fit with job satisfaction and organisational commitment, and a negative correlation with intention to quit. Moreover, both studies reported that job satisfaction partially mediated the relationship between needs-supplies P-O fit and intention to quit.

Articles measuring P-O and P-G fit

There was a dearth of research examining P-O and P-G fit together in healthcare, limiting knowledge regarding their relationship. Of the two articles purporting to measure both P-O and P-G fit, it appeared that based on the items used, one rigorously measured only P-O fit,[73] and the other did not delve into the fit framework, but rather measured P-O and P-G value congruence.[53] As such, it was not possible to draw any reasonable conclusions on the potential interactional effect between P-

O and P-G fit on staff outcomes in health environments. This indicates the importance of definitional consistency in fit research.

Staff outcomes measured

In addition to the variability amongst the type of fit studied, there was also variation in the staff outcomes measured. The main types of outcomes included satisfaction, intention to quit, organisational commitment, burnout, and absenteeism (**Table 5**).

Table 5. Staff outcomes assessed in the studies included in this review

Term	**Alternative terms**	**Included articles measuring and recording this outcome**[a]
Satisfaction	Job satisfaction, work satisfaction, career satisfaction	17
Intention to quit	Turnover intent, intention to stay, job search behaviour, intent to leave job, intent to leave profession, actual turnover	16
Organisational commitment	Loyalty, organisational citizenship behaviour (OCB)[b], caring behaviour	10
Burnout	N.A.	10
Stress	Time pressure, job stress, psychosomatic complaints	4
Absenteeism	Sick leave behaviour	4
Other	Eg, Self-rated health, accident propensity, employee attitude	3

[a]The total of this column does not equate to the total number of included articles, as some studies measured outcomes from more than one column.

[b]Organisational citizenship behaviour (OCB) is defined as voluntary actions undertaken by an employee and directed towards individuals or organisations. The actions may not be rewarded, but they contribute to the work environment.[67]

Overall findings

Overall, 96.4% of included articles (27/28) reported a significant, positive relationship between P-O or P-G fit and staff outcomes, such that greater compatibility with one's workplace or organisation was associated with more positive outcomes for staff (e.g., lower levels of burnout, increased satisfaction). Of these, 22 articles reported an exclusively positive relationship, showing that the relationship between fit and each measured staff outcome was in the direction hypothesised. A further five articles reported a partially positive relationship; in other words, some staff outcomes had a significant association with fit in the direction hypothesised, but the association with other outcomes did not reach a level of statistical significance (e.g., a reported positive association between measures of fit and job satisfaction and loyalty, but no association with turnover).[72] Finally, one article reported no significant association between the two entities (namely, P-O value fit and actual turnover).[74]

DISCUSSION

The results of this review provided robust evidence for the initial postulation that stronger P-O fit, and to a lesser extent P-G fit, would be associated with more positive outcomes, such as organisational commitment and job satisfaction, and decreased intent to quit, burnout, and stress. Even with a relatively small number of P-G fit articles compared with P-O fit articles, the trend across the results suggests the importance of *both* constructs in increasing an individuals' perception

of fit, and that this is conducive to better outcomes for staff working in healthcare. Hence, this review highlights the importance for people's well-being in feeling a sense of fit with both their work-group and their wider organisation—a result that confirms previous results from systematic reviews not conducted in healthcare.[15, 82] Specifically, evidence suggests the importance of similar values between individuals and their workplace and organisation.[24, 53, 55-57, 61, 76] Not only may this have positive downstream effects on the employees themselves, but it also has the potential to positively impact on the outcomes they produce in the work environment which, in healthcare, equates to better patient care.[6]

Research regarding the process of individual adaption to the work context is growing,[83, 84] which will add richness to the understanding of how to most effectively foster perceived fit and improve cultures in healthcare settings. This review will, we hope, offer welcome guidance to policymakers, managers and other custodians of organisational culture in healthcare on the importance of enhancing fit perceptions between individuals and their work environments. Ultimately, such strategies aim to increase mutually beneficial fit at work.

The results have important implications for clinicians, allied health professionals, healthcare managers, and policymakers involved in the development and implementation of culture change interventions. Most apparently, they suggest the importance of individuals being motivated to seek work at organisations that hold similar values and goals to their own.[53, 85] Alternatively, in the case of employed individuals being incompatible with the workplace or organisation, the results suggest the importance of bridging this gap.[86-88] The systematic review is the first in the context of healthcare to highlight the mutual benefit of adaption and flexibility of both the individual and the environment, in order to create better fit between healthcare staff and the places they work, which may also potentially improve patient care.

Strengths and limitations

There are several strengths and limitations to this study. The review searched multiple databases, and was thorough and rigorous, applying PRISMA methodology, and assessing bias and quality. Bias is unavoidable, and thus readers should be mindful of this potential bias when judging the strength of evidence for the association between P-O and P-G fit with staff outcomes. Additionally, the included articles were inconsistent and heterogeneous in their labelling and measuring of fit. For example, some articles measured value congruence but did not explain the wider concept of supplementary fit,[59, 64] whilst others specified this information.[52, 74] This meant we had to make some choices regarding the identification and grouping of articles for this review. In the future, empirical studies of P-O and P-G fit in health settings could address these limitations by explicitly identifying what facet of fit they are studying, and linking this to their measurement tool.

CONCLUSION

The results of this systematic review indicate that fitting in at work is conducive to improved staff outcomes in healthcare. The results argue in favour of the intrinsic benefit of improving staff well-being. However, it remains unclear of *how* to best enhance organisational cultures, to therefore have downstream effects on employees productivity and quality of work.

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Figure legends to be inserted into manuscript

Figure 1. Rich picture modelling the process of fit and adaptation [83]

Figure 2. Search process

Total for "reasons for exclusion" does not add up to the total number of articles excluded, as some articles had multiple reasons for exclusion.

Figure 3. Trends in the frequency of published P-O and P-G fit research conducted in a health setting over time

Bars represent the number of peer-reviewed articles on this topic in the corresponding year (as established from inclusion in the systematic review).

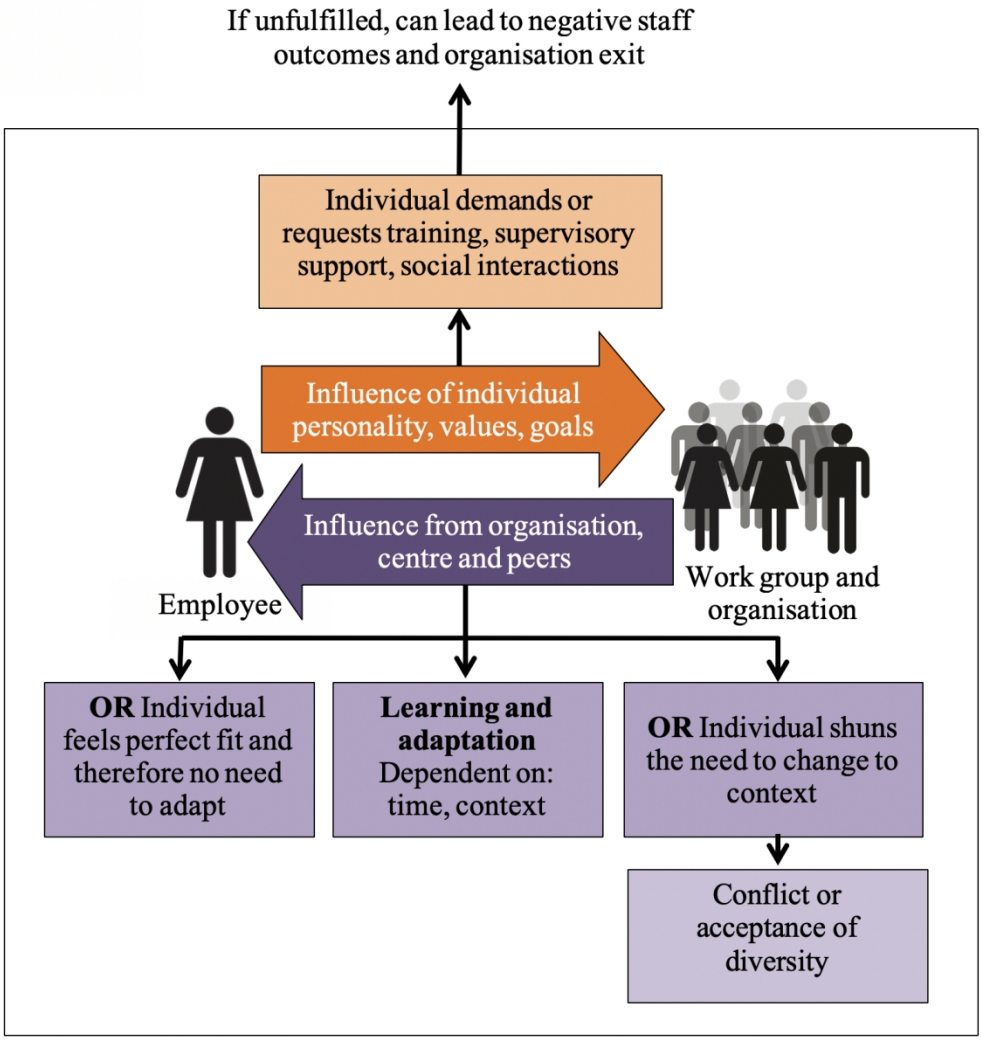
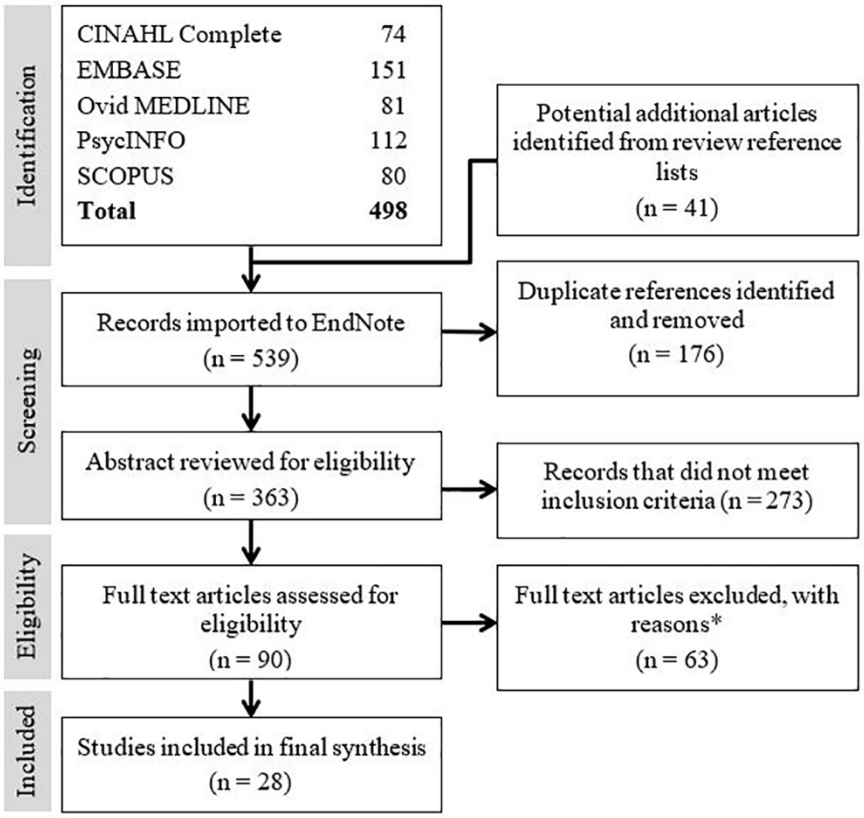


Figure 1. Rich picture modelling the process of fit and adaptation [83]



***Reason for exclusion of articles with full text review**

Reason for exclusion	Number of texts excluded for this reason
Full text not available	6
Language not in English	4
Not primary empirical study	5
Not in healthcare context	33
Not peer reviewed journal article	5
Does not measure association	9

Figure 2. Search process

Total for "reasons for exclusion" does not add up to the total number of articles excluded, as some articles had multiple reasons for exclusion.

90x116mm (300 x 300 DPI)

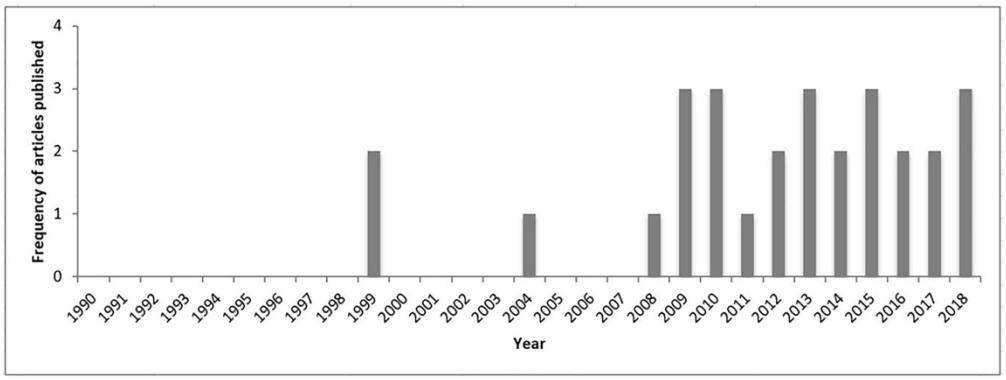


Figure 3. Trends in the frequency of published P-O and P-G fit research conducted in a health setting over time

Bars represent the number of peer-reviewed articles on this topic in the corresponding year (as established from inclusion in the systematic review).

240x90mm (300 x 300 DPI)

HOW PEOPLE FIT IN AT WORK: A SYSTEMATIC REVIEW OF THE ASSOCIATION BETWEEN PERSON-ORGANISATION AND PERSON-GROUP FIT WITH STAFF OUTCOMES IN HEALTHCARE

Supplementary File

The following Supplementary File includes three appendices to complement the main document, with titles as follows:

Appendix 1: Complete Search Strategy

Appendix 2: Quality Assessment Tool Ratings of Articles Included in Systematic Review

Appendix 3: Information About Included Articles from the Systematic Review

APPENDIX 1: Complete Search Strategy

Please see below for the search terms used to complete the searches for each electronic database. These are CINAHL Complete (**Table 1**), EMBASE (**Table 2**), Ovid MEDLINE (**Table 3**), PsycINFO (**Table 4**) and SCOPUS (**Table 5**).

Table 1 CINAHL Complete search strategy

1	(MH "Job Satisfaction") OR (MH "Personnel Turnover") OR (MH "Attitude of Health Personnel+") OR (MH "Personnel Retention") OR (MH "Personnel, Health Facility+") OR (MH "Burnout, Professional+")
2	(Burnout OR staff outcome* OR job satisfaction OR staff satisfaction OR employee satisfaction OR employee outcome* OR retention OR staff recognition OR employee recognition OR intention to stay OR intention to leave OR debrief* OR intent to turnover OR turnover intention OR organi*ation* commitment OR stress OR work attitude OR occupational hazard* OR collegiality OR working relationship* OR teamwork OR collaboration)
3	1 OR 2
4	(Health organi*ation* OR hospital* OR health facilit* OR acute care OR primary care OR primary health care OR health context OR health setting OR health service OR health*care OR tertiary care or nurse* or health profession* or doctor or GP or physician* or dentist* or health or health care service* or gyn*ecologist* or h*ematologist* or internist* or obstetrician* or p*ediatrician* or pharmacist* or physiotherapist* or psychiatrist* or psychologist* or radiologist* or surgeon* or surgery or therapist* or counse*lor* or neurologist* or optometrist*)
5	(person-organi*ation fit or person organi*ation fit or supplementary fit or complementary fit or needs-supplies fit or supplies-values fit or demands-abilities fit or supplementary congruence or complementary congruence or similarity fit or value congruence or goal congruence or personality congruence or person-group fit or person-team fit)
6	3 AND 4 AND 5

Table 2. EMBASE search strategy

1	(person-organi*ation fit or person organi*ation fit or supplementary fit or complementary fit or needs-supplies fit or supplies-values fit or demands-abilities fit or supplementary congruence or complementary congruence or similarity fit or value congruence or goal congruence or personality congruence or person-group fit or person-team fit).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating

	subheading]
2	(person adj3 group).ti,ab.
3	(person adj3 organi*ation).ti,ab.
4	1 OR 2 OR 3
5	(Health organi*ation* or hospital* or health facilit* or acute care or primary care or primary health care or health context or health setting or health service or health*care or tertiary care or nurse* or health profession* or doctor or GP or physician* or dentist* or health or health care service* or gyn*ecologist* or h*ematologist* or internist* or obstetrician* or p*ediatrician* or pharmacist* or physiotherapist* or psychiatrist* or psychologist* or radiologist* or surgeon* or surgery or therapist* or counse*lor* or neurologist* or optometrist*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]
6	exp health care facility/
7	exp health care delivery/
8	5 OR 6 OR 7
9	(Burnout or staff outcome* or job satisfaction or staff satisfaction or employee satisfaction or employee outcome* or retention or staff recognition or employee recognition or intention to stay or intention to leave or debrief* or intent to turnover or turnover intention or organi*ation* commitment or stress or work attitude or occupational hazard* or collegiality or working relationship* or teamwork or collaboration).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]
10	Exp health personnel attitude/
11	job satisfaction/
12	stress/
13	burnout/
14	9 OR 10 OR 11 OR 12 OR 13
15	4 AND 8 AND 14

Table 3. Ovid MEDLINE search strategy

1	(person-organi*ation fit or person organi*ation fit or supplementary fit or complementary fit or needs-supplies fit or supplies-values fit or demands-abilities fit or supplementary congruence or complementary congruence or similarity fit or value congruence or goal congruence or personality congruence or person-group fit or person-team fit).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]
2	(person adj3 group).ti,ab.
3	(person adj3 organi*ation).ti,ab.
4	1 OR 2 OR 3
5	(Health organi*ation* or hospital* or health facilit* or acute care or primary care or primary health care or health context or health setting or health service or health*care or tertiary care or nurse* or health profession* or doctor or GP or physician* or dentist* or health or health care service* or gyn*ecologist* or h*ematologist* or internist* or obstetrician* or p*ediatrician* or pharmacist* or physiotherapist* or psychiatrist* or psychologist* or radiologist* or surgeon* or surgery or therapist* or counse*lor* or neurologist* or optometrist*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]
6	"Delivery of Health Care"/
7	5 OR 6
8	(Burnout or staff outcome* or job satisfaction or staff satisfaction or employee satisfaction or employee outcome* or retention or staff recognition or employee recognition or intention to stay or intention to leave or debrief* or intent to turnover or turnover intention or organi*ation* commitment or stress or work attitude or occupational hazard* or collegiality or working relationship* or teamwork or collaboration).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]
9	job satisfaction/
10	Stress, psychological/
11	Burnout, professional/
12	Personnel turnover/
13	Interprofessional relations/
14	8 OR 9 OR 10 OR 11 OR 12 OR 13
15	4 AND 7 AND 14

Table 4. PsycINFO search strategy

1	(person-organi*ation fit or person organi*ation fit or supplementary fit or complementary fit or needs-supplies fit or supplies-values fit or demands-abilities fit or supplementary congruence or complementary congruence or similarity fit or value congruence or goal congruence or personality congruence or person-group fit or person-team fit).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]
2	(person adj3 group).ti,ab.
3	(person adj3 organi*ation).ti,ab.
4	1 OR 2 OR 3
5	(Health organi*ation* or hospital* or health facilit* or acute care or primary care or primary health care or health context or health setting or health service or health*care or tertiary care or nurse* or health profession* or doctor or GP or physician* or dentist* or health or health care service* or gyn*ecologist* or h*ematologist* or internist* or obstetrician* or p*ediatrician* or pharmacist* or physiotherapist* or psychiatrist* or psychologist* or radiologist* or surgeon* or surgery or therapist* or counse*lor* or neurologist* or optometrist*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]
6	Exp health care delivery/
7	5 OR 6
8	(Burnout or staff outcome* or job satisfaction or staff satisfaction or employee satisfaction or employee outcome* or retention or staff recognition or employee recognition or intention to stay or intention to leave or debrief* or intent to turnover or turnover intention or organi*ation* commitment or stress or work attitude or occupational hazard* or collegiality or working relationship* or teamwork or collaboration).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]
9	Exp health personnel attitudes/
10	Exp job satisfaction/
11	Exp occupational stress/
12	Exp employee turnover/
13	8 OR 9 OR 10 OR 11 OR 12

14	4 AND 7 AND 13

Table 5. SCOPUS search strategy

TITLE-ABS-KEY((“person-organi*ation fit” OR “person organi*ation fit” OR “supplementary fit” OR “complementary fit” OR “needs-supplies fit” OR “supplies-values fit” OR “demands-abilities fit” OR “supplementary congruence” OR “complementary congruence” OR “similarity fit” OR “value congruence” OR “goal congruence” OR “personality congruence” OR “person-group fit” OR “person-team fit”) AND (“Health organi*ation*” OR “hospital*” OR “health facilit*” OR “acute care” OR “primary care” OR “primary health care” OR “health context” OR “health setting” OR “health service” OR “health*care” OR “tertiary care” OR “nurse*” OR “health profession*” OR “doctor” OR “GP” OR “physician*” OR “dentist*” OR “health” OR “health care service*” OR “gyn*ecologist*” OR “h*ematologist*” OR “internist*” OR “obstetrician*” OR “p*ediatrician*” OR “pharmacist*” OR “physiotherapist*” OR “psychiatrist*” OR “psychologist*” OR “radiologist*” OR “surgeon*” OR “surgery” OR “therapist*” OR “counse*lor*” OR “neurologist*” OR “optometrist*”) AND (“Burnout” OR “staff outcome*” OR “job satisfaction” OR “staff satisfaction” OR “employee satisfaction” OR “employee outcome*” OR “retention” OR “staff recognition” OR “employee recognition” OR “intention to stay” OR “intention to leave” OR “debrief*” OR “intent to turnover” OR “turnover intention” OR “organi*ation* commitment” OR “stress” OR “work attitude” OR “occupational hazard*” OR “collegiality” OR “working relationship*” OR “teamwork” OR “collaboration”))

APPENDIX 2: Quality Assessment Tool Ratings of Articles Included in Systematic Review

Reference	Abstract and title	Introduction and aims	Method and data	Sampling	Data analysis	Ethics and bias	Results	Transferability/ generalizability	Usefulness	Total
Bao Y, Vedina R, Moodie S, and Dolan S. (2013) *Journal of Advanced Nursing.* 69(3):631-641.	4	4	4	4	4	4	4	4	4	36
Bellou V. (2009) *Employee Relations*. 31(5):455-470.	4	4	4	4	4	2	4	4	4	34
Boon C, and Biron M. (2016) *Human Relations.* 69(12):2177-2200.	4	3	4	4	4	2	3	4	4	32
Cha J, Chang YK, and Kim T-Y. (2014) *Journal of Business Ethics.* 123(1):57-69.	4	4	4	4	4	2	4	4	4	34
Cooper-Thomas HD, and Poutasi C.(2011) *Asia Pacific Journal of Human Resources*. 49(2):180-192.	4	4	4	4	4	4	4	3	4	35
Dotson MJ, Dave	3	2	2	3	3	1	3	3	3	23

Reference	Abstract and title	Introduction and aims	Method and data	Sampling	Data analysis	Ethics and bias	Results	Transferability/ generalizability	Usefulness	Total
DS, Cazier JA, and Spaulding TJ. (2014) *Journal of Nursing Administration*. 44(2):111-116.										
Findik M, Öğüt A, and Çağliyan V. (2013) *Mediterranean Journal of Social Sciences*. 4(11):434-440.	4	2	2	3	3	1	3	3	2	23
Gates MG, and Mark BA. (2012) *Research in Nursing and Health*. 35(3):265-276.	3	4	4	4	4	2	4	3	4	32
Gillet N, Fouquereau E, Coillot H, et al. (2018) *Journal of Advanced Nursing*. 74(5):1208-1219.	4	4	4	3	4	3	4	3	4	33

Reference	Abstract and title	Introduction and aims	Method and data	Sampling	Data analysis	Ethics and bias	Results	Transferability/ generalizability	Usefulness	Total
Gregory ST and Menser T. (2015) *Journal of healthcare management / American College of Healthcare Executives*. 60(2):133-148.	3	3	2	2	4	1	4	2	2	23
Hatton C, Rivers M, Mason H, et al. (1999) *Journal of Intellectual Disability Research*. 43(3):206-218.	4	4	3	3	4	1	3	3	4	29
Kalliath TJ, Bluedorn AC, and Strube MJ. (1999) *Journal of Organizational Behavior*. 20(7):1175-1198.	4	4	3	4	4	4	3	4	4	34
Lamiani G, Dordoni P, and Argentero P. (2018) *Stress and Health*. 34(1):135-142.	3	4	4	3	4	4	4	3	4	33

Reference	Abstract and title	Introduction and aims	Method and data	Sampling	Data analysis	Ethics and bias	Results	Transferability/ generalizability	Usefulness	Total
Lee S and Jang E. (2017) *Journal of Engineering and Applied Sciences*. 12(14):3767-3778.	3	4	4	3	4	1	4	3	4	30
Leiter MP, Day A, and Price L. (2015) *Burnout Research*. 2(1):25-35.	4	2	3	3	3	4	3	4	4	30
Leiter MP, Frank E, and Matheson TJ. (2009) *Canadian Family Physician*. 55(12):1224-1226.	3	4	4	4	3	2	3	4	4	31
Leiter MP, Gascon S, and Maru'nez-Jarreta B. (2010) *Journal of Applied Social Psychology*. 40(1): 57-75.	3	4	4	4	4	3	4	4	4	34

Reference	Abstract and title	Introduction and aims	Method and data	Sampling	Data analysis	Ethics and bias	Results	Transferability/ generalizability	Usefulness	Total
Leiter MP, Jackson NJ, and Shaughnessy K. (2009) *Journal of Nursing Management*. 17(1):100-109.	4	4	4	3	4	2	4	2	4	31
Leiter MP. (2008) *Giornale Italiano di Medicina del Lavoro Ed Ergonomia*. 30(1 Suppl A):A52-58.	4	3	3	4	3	2	1	3	3	26
Rehfuss MC, Gambrell CE, and Meyer D. (2012) *The Career Development Quarterly*. 60(2):145-151.	4	4	4	3	4	4	4	3	4	34
Ren T, and Hamann DJ. (2015) *Personnel Review*. 44(4):550-566.	3	4	4	3	4	3	4	4	4	33
Ren T. (2013) *Journal of Business Ethics*. 112(2):213-224.	4	4	4	3	4	2	3	3	4	31
Risman KL, Erickson RJ, and	4	4	4	3	4	1	3	3	4	30

Reference	Abstract and title	Introduction and aims	Method and data	Sampling	Data analysis	Ethics and bias	Results	Transferability/ generalizability	Usefulness	Total
Diefendorff JM. (2016) *Applied Nursing Research*. 31:121-125.										
Schmidt KH. (2010) *International Journal of Nursing Studies*. 47(7):855-863.	4	4	4	3	3	2	4	4	4	32
Shao J, Tang L, Wang X et al. (2018) *Journal of Nursing Management.* 26(8):1091-1099.	4	4	4	3	4	1	4	3	4	31
Somers MJ. (2010) *Journal of Occupational and Organizational Psychology.* 83(2):443-453.	3	4	4	3	4	1	4	3	4	30
Verplanken B. (2004) *International Journal of Nursing Studies*. 41(6):599-605.	4	4	4	4	4	1	4	3	3	31
Zhang M, Yan F, Wang W, and Li G. (2017) *BMJ*	4	4	4	3	4	4	4	4	4	35

Reference	Abstract and title	Introduction and aims	Method and data	Sampling	Data analysis	Ethics and bias	Results	Transferability/ generalizability	Usefulness	Total
Open. 7(2).										

APPENDIX 3. Information About Included Articles from the Systematic Review

Reference	Study objectives/hypotheses/ research questions related to systematic review	Study design	Context; type of participants; number of participants	PO/PG fit?*; type of fit studied; findings direction; staff outcome	Key findings
Bao Y, Vedina R, Moodie S, and Dolan S. (2013) *Journal of Advanced Nursing.* 69(3):631-641.	Value incongruence will be positively related to burnout, turnover intention and accident propensity, and negatively related to self-rated health. Moreover, it was hypothesised that burnout mediates the relationship between value incongruence and self-rated health/turnover intention/accident propensity. (see p. 633-634)	Quantitative; cross-sectional	Large university hospital; nurses; 234	PO; value congruence; self-rated health, turnover intention, accident propensity, burnout; partly positive	"Of the three value axes, Economical and Ethical value incongruence are correlated with burnout. This suggests that hypothesis H1 is supported on these two axes. Moreover, Emotional and Ethical value incongruence were correlated with accident propensity. Thus, hypothesis H4a was supported on these two axes. All three types of value incongruence were correlated with turnover intention (hypothesis H3a fully confirmed), but none of them was related to health (H2a rejected)." (p. 635-636)
Bellou V. (2009) *Employee Relations*. 31(5):455-470.	"This study is an attempt to explore the effect that value congruence between employees and public organizations has on exit, voice, loyalty, and neglect (EVLN) displayed by the former … This study expects to reveal the mediating role of job satisfaction in the relationship between P-O fit and these responses." (p. 456)	Quantitative; cross-sectional	Three public hospitals; medical, nursing and administration staff; 125	PO; supplementary value congruence; exit, voice, loyalty and neglect (EVLN), and job satisfaction; partly positive	"The greater the P-O fit, the higher the job satisfaction and the loyalty. On the contrary, the relationship between P-O fit and neglect is negative whereas between P-O fit and exit and voice is non-significant." (p. 463, statistics excluded from quote)
Boon C, and Biron M. (2016) *Human Relations.* 69(12):2177-	"We examine the role of leader–member exchange in the relationship between two types of person–environment fit over	Quantitative; longitudinal	Elderly care organisation; nurses, therapists, physicians and	PO; supplementary value congruence; turnover; nil	PO fit was significantly correlated with needs-supplies and demands-abilities fit, but were not significantly correlated with actual turnover (p. 2188)

2200.	time: person–organization and person–job fit, and subsequent turnover" (p. 2177)		support staff; 160		
Cha J, Chang YK, and Kim T-Y. (2014) *Journal of Business Ethics*. 123(1):57-69.	"Hypothesis 3a Organizational citizenship and caring behavior will decrease as personal prosocial identity increases toward organizational prosocial identity and will increase as personal prosocial identity exceeds organizational prosocial identity. Hypothesis 3b Organizational citizenship and caring behavior will be higher when personal and organizational prosocial identities are both high than when both are low." (p. 61)	Quantitative; cross-sectional	104 hospitals; doctors, nurses, administrative staff; 589	PO; supplementary personality and value congruence; organizational citizenship behaviour (OCB), caring behaviour; positive	"Hypothesis 3a was supported only for OCBI and caring behavior … Hypothesis 3b was supported" (p. 64-65) OBCI=OBC towards individuals (rather than organisations)
Cooper-Thomas HD, and Poutasi C.(2011) *Asia Pacific Journal of Human Resources*. 49(2):180-192.	"Research question 1: Is PJ fit or PO fit the more important predictor of (a) job satisfaction and (b) organizational commitment? Research question 2: Which mediated path is the strongest predictor of intent to quit?" (p. 183)	Quantitative; cross-sectional	Different contexts; Pacific health care workers with various roles, eg, nursing, administration, management (heritage from a Pacific Island, have higher rates of chronic illness than other ethnic groups); 99	PO; complementary and supplementary (but it is unspecified which component of supplementary fit is being examined); job satisfaction, organisational commitment, intention to quit; positive	PO fit was significantly positively correlated with job satisfaction and organisational commitment, and significantly negatively correlated with intention to quit. Job satisfaction and organizational commitment themselves also have significant direct effects on intention to quit.
Dotson MJ, Dave DS, Cazier JA, and Spaulding TJ. (2014) *Journal of*	Measured the effect of value congruence on intention to leave the job and the nursing profession, and job satisfaction	Quantitative; cross-sectional	Various nursing contexts, eg, hospital, administration,	PO, PG; supplementary value congruence; intention to leave job, intention	As expected, value congruence was significantly positively associated with job satisfaction, and negatively associated with intention to leave the job. However

Nursing Administration. 44(2):111-116.			doctors office, school. In rural and urban environments; nurses; 861	to leave profession, job satisfaction; partly positive	unexpectedly it was also significantly *positively* associated with intention to leave the nursing profession
Findik M, Öğüt A, and Çağliyan V. (2013) *Mediterranean Journal of Social Sciences*. 4(11):434-440.	"To study the relationships between the level of person-organization fit, the level of job satisfaction, and the levels of turnover intentions." (p. 436)	Quantitative; cross-sectional	Doctors and professors working in internal medicine, surgical or basic medicine areas; health personnel; 128	PO, PG; PO: supplementary value congruence, knowledge, skills and abilities (KSAs), personality. PG: supplementary value congruence; job satisfaction, turnover intent; positive	The study reported a statistically significant relationship between PO fit and both job satisfaction and turnover intent
Gates MG, and Mark BA. (2012) *Research in Nursing and Health*. 35(3):265-276.	"The greater the diversity based on values, the more negative the outcomes." (p. 267)	Quantitative; longitudinal	Participants included in the final study worked in 239 units from 133 hospitals; nurses; 1,450	PG; supplementary value congruence; job satisfaction, intent to stay; positive	"The less similar nurses perceived themselves to be relative to others in their unit in terms of values (eg, greater perceived value diversity), the less likely they were to be satisfied with their jobs and the less likely they were to report intent to stay in their current position" (p. 272)
Gillet N, Fouquereau E, Coillot H, et al. (2018) *Journal of Advanced Nursing*. 74(5):1208-1219.	That value congruence would be positively related to nurse job satisfaction, and that this may be mediated by needs satisfaction. It was also hypothesised that nurses' job satisfaction would be positively associated with quality of care and negatively associated with intention to quit.	Quantitative; cross-sectional	Nurses from 11 oncology units; 144	PO; supplementary value congruence; positive	The statistical analyses found that value congruence positively predicts nurses' job satisfaction, and that job satisfaction was positively associated with quality of care and negatively with turnover intentions.
Gregory ST and Menser T. (2015) *Journal of healthcare*	"This study is an opportunity to develop and test the theory for burnout in the primary care setting; specifically, it will	Quantitative; longitudinal	Ambulatory units: primary care physicians; 153 (97 at baseline, 91 at	PO; supplementary value congruence; burnout; positive	It was reported that values were significantly association with all three aspects of burnout (emotional exhaustion, depersonalization, and self-efficacy, which is defined as the level of

management / American College of Healthcare Executives. 60(2):133-148.	determine the applicability of the AWS model in measuring burnout for primary care physicians." (p. 137)		the 3-month follow-up, and 56 at the final 6-month follow-up) representing 244 total responses		personal accomplishment one feels with respect to their work).[2,13,14]
Hatton C, Rivers M, Mason H, et al. (1999) *Journal of Intellectual Disability Research*. 43(3):206-218.	"To investigate relationships between person± organization `fit' and staff outcomes. If the theory is correct, greater person±organization 'fit' should be associated with better staff outcomes across a range of indices." (p. 43)	Quantitative; cross-sectional	UK services for people with intellectual disabilities (village, community residential, education and community teams); staff at all levels, eg, administrative, domestic, managerial and therapeutic staff; 450	PO; NA; job stress, job search behaviour, intention to leave, sick leave behaviour, work satisfaction; partly positive	"Higher levels of general stress were strongly associated with poorer person-organization fit on the organization culture dimension of tolerant/ staff-oriented. Greater job strain was strongly associated with poorer person-organization fit on four dimensions ... Intention to leave was strongly associated with poorer person-organization fit on four organizational culture dimensions ... Actual job search behaviour and sick leave in the previous 6 months were not strongly associated with any dimension of organizational culture. Finally, higher levels of work satisfaction were very strongly associated with better person-organization fit on all nine dimensions of organizational culture" (p. 43)
Kalliath TJ, Bluedorn AC, and Strube MJ. (1999) *Journal of Organizational Behavior*. 20(7):1175-1198.	"The greater the congruence between individuals' (a) internal process (b) open systems (c) human relations, and (d) rational goal values and their perceptions of (a) internal process (b) open systems (c) human relations, and (d) rational goal values in the organization, respectively, the higher their levels of organizational commitment ... [and] job satisfaction" (p. 1181)	Quantitative; cross-sectional	Two hospitals; executives, middle managers, first-line supervisors, employees, resident physicians, contract workers; 1358	PO; value congruence; job satisfaction, organisational commitment; positive	There were significant positive intercorrelations between value congruence on the one hand, and job satisfaction and organisational commitment on the other. Moreover, "These results indicate weak support for the four congruence hypotheses predicting organizational commitment ... [and] predicting job satisfaction" (p. 1189)

Lamiani G, Dordoni P, and Argentero P. (2018) *Stress and Health*. 34(1):135-142.	To investigate if moral distress mediated the relationship between clinicians' value congruence and depression	Quantitative; cross-sectional	Seven intensive care units in a hospital; physicians, nurses and residents; 181	PO; supplementary value congruence; positive	Value congruence had a significant effect on depression, mediated by moral distress
Lee S and Jang E. (2017) *Journal of Engineering and Applied Sciences*. 12(14):3767-3778.	That PO fit perceptions will have a unique positive relationship with organizational commitment and job satisfaction	Quantitative; cross-sectional	Hospital, pharmacy, and other non-health settings; 199	PO; supplementary value congruence; positive	PO has unique, statistically significant positive relationships with organisational commitment and job satisfaction
Leiter MP, Day A, and Price L. (2015) *Burnout Research.* 2(1):25-35.	"To examine the contribution of attachment dimensions to predicting burnout beyond measures of workload, value congruence, and coworker incivility" (p. 31-32)	Quantitative; cross-sectional	Hospital; managers and front-line staff from many professions; 1624	PO; supplementary value congruence; burnout; positive	"The contribution of attachment styles to a model of burnout based on workload and value congruence emphasizes the importance of considering employees' understanding of their social context" (p.34) … value congruence was significantly associated with all other variables
Leiter MP, Frank E, and Matheson TJ. (2009) *Canadian Family Physician*. 55(12):1224-1226.	"Values and manageable workload would interact differently for women and men when predicting burnout." (p. 1225.e1)	Quantitative; cross-sectional	NA (online survey); physicians; 2536	PO; supplementary value congruence; burnout; positive	"Values congruence predicted exhaustion and cynicism for men and women (P = .001)" (p. 1225e2) … "The results also confirmed that workload and values congruence interact differently for women and men." (p. 1225e4)
Leiter MP, Gascon S, and Maru'nez-Jarreta B. (2010) *Journal of Applied Social Psychology*. 40(1): 57-75.	"The study evaluates a structural equation model in which the three aspects of burnout— exhaustion, cynicism, and efficacy—mediate the relationship of the work environment with employees' evaluation of organizational change" (p. 57)	Quantitative; cross-sectional	Three hospitals in northern and Eastern Spain; nurses and physicians; 874; 603	PO; value congruence; burnout; positive	There was a significant negative correlation for both doctors and nurses value congruence with exhaustion and cynicism (components of burnout), and a significantly positive correlation with efficacy. (p. 66) … "Second, value congruence was significantly related to all three aspects of relationships with work. The path from values to cynicism was relatively small in the modified model, indicating that most of that relationship was

					mediated through exhaustion in light of the large zero-order correlation between the two constructs. They are clearly related, but much of that relationship is associated with the energetic process captured by exhaustion. Together, the analysis supports the core constructs of the model." (p. 70)
Leiter MP, Jackson NJ, and Shaughnessy K. (2009) *Journal of Nursing Management*. 17(1):100-109.	Authors expected there would be "a more powerful relationship of work values with generation than with organizational tenure. This contrast is central to the study's focus on generation as a value position: the important point is not simply a nurses' age or job tenure, but the inherent generational values." (p. 103)	Quantitative; cross-sectional	Acute care facilities; nurses; 667	PO; supplementary value congruence; burnout, turnover intent; positive	"The analysis identified a greater person/organization value mismatch for Generation X nurses than for Baby Boomer nurses. Their greater value mismatch was associated with a greater susceptibility to burnout and a stronger intention to quit for Generation X nurses." (p. 100)
Leiter MP. (2008) *Giornale Italiano di Medicina del Lavoro Ed Ergonomia*. 30(1 Suppl A):A52-58.	To test "the extent to which value congruence enhances the prediction of burnout beyond the prediction provided by demands and resources." (p. A52)	Quantitative; cross-sectional	Tertiary hospitals, regional hospitals, community hospitals and other settings; nurses; 725	PO; value congruence; burnout; positive	There was a significant correlation between value congruence and each dimension of burnout … For further analysis, "Only two correlated error terms were freed in the analysis: MBI-3 with MBI-4 and Control-1 with Control-2." (p. A56) So values were not analysed in results.
Rehfuss MC, Gambrell CE, and Meyer D. (2012) *The Career Development Quarterly*. 60(2):145-151.	"We hypothesized that each type of fit would be positively related to counselor career satisfaction." (p. 146)	Quantitative; cross-sectional	Various counselling and counselling education contexts; counsellors; 437	PO; supplementary value congruence; career satisfaction; positive	"P-O and N-S fit were both positively related to career satisfaction, and no relationship was found between career satisfaction and D-A fit." (p. 149) Please note, N-S and D-A fit were measured for person-job fit, and are not considered further for this systematic review

Ren T, and Hamann DJ. (2015) *Personnel Review*. 44(4):550-566.	Examine how employee-organisation value congruence was related to the staff outcomes of satisfaction, turnover intent and organisational commitment at different levels of nursing.	Quantitative; cross-sectional	Nursing homes; nurses; 562	PO; supplementary value congruence; satisfaction, turnover intent and organisational commitment; positive	"Value congruence is found positively associated with nurses' job satisfaction and organizational commitment, but negatively with turnover intention." (p. 550)
Ren T. (2013) *Journal of Business Ethics*. 112(2):213-224.	"Organizational ownership moderates the relationship between employee–organization value congruence and employees' (a) job satisfaction, (b) organizational commitment, and (c) intent to quit in a way that the effect is stronger among for-profit employees in comparison to the nonprofit counterparts." (p. 215)	Quantitative; cross-sectional	23 non-profit and 7 for-profit nursing homes; registered nurses, licenced practicing nurses, certified nursing assistants; 407	PO; value congruence; Job satisfaction, Organisational commitment, intention to quit; positive	"Employees' value congruence has a positive relationship with employees' self-rating on job satisfaction ($p < 0.01$, two-tailed test), organizational commitment ($p < 0.01$, two-tailed test), and a negative relationship with intent to quit ($p < 0.01$, two-tailed test) ... in general, value congruence improves the three aspects of job attitudes across different ownership types of organization, and among two out of the three cases the effect appears to be stronger in for-profit organizations" (p. 221-222)
Risman KL, Erickson RJ, and Diefendorff JM. (2016) *Applied Nursing Research*. 31:121-125.	"This study investigates the relationship of perceived value congruence with ... job satisfaction … [it is hypothesised that] value congruence will be positively related to nurses' job satisfaction." (p. 122)	Quantitative; cross-sectional	Hospital; nurses; 753	PO; supplementary value congruence (although one item unintentionally measures goal congruence); job satisfaction; positive	Perceived value congruence was significantly correlated with job satisfaction

Schmidt KH. (2010) *International Journal of Nursing Studies*. 47(7):855-863.	"Goal incongruence is expected to be positively related to indicators of job strain." (p. 857)	Quantitative; longitudinal	Six nursing homes; employees in the nursing homes; 242	PO; goal congruence; burnout, psychosomatic complaints, absenteeism; positive	Goal incongruence was significantly correlated with all outcome variables … "the results show that the perceived mismatch between personal and organizational goals is positively related to a broad spectrum of indicators of strain that includes both self-report measures (exhaustion, depersonalization, psychosomatic complaints) and measures of absenteeism covering a period of 12 months after the administration of questionnaires." (p. 860)
Shao J, Tang L, Wang X et al. (2018) *Journal of Nursing Management.* 26(8):1091-1099.	To explore the relationship between work environment, value congruence and work-related outcomes	Quantitative; cross-sectional	Nationwide; nurses; 19149	PO; supplementary value congruence; positive	The results showed that value congruence was positively associated with job satisfaction, and negatively associated with burnout and turnover intention
Somers MJ. (2010) *Journal of Occupational and Organizational Psychology.* 83(2):443-453.	"The level of person–organization value congruence for highly committed employees, those with an AC–NC dominant profile, and those with an AC dominant profile is significantly greater than is the level of person–organization value congruence for the other commitment profiles." (p. 447). AC=affective commitment; NC=normative commitment	Quantitative; longitudinal	Hospital in an urban area; employees directly involved in patient care; 572	PO; supplementary value congruence; organisational commitment, turnover intent, turnover, absenteeism; partly positive	Value congruence was significantly correlated with affective and normative commitment, turnover intention and turnover, but not absenteeism. The P-O fit hypothesis was supported such that "the AC–NC dominant profile had the highest levels of person-organization value- congruence followed by highly committed employees and those with an AC dominant profile. Although, the ordering of the means was as expected, it should be noted that the difference between highly committed employees and those with an AC dominant profile was not statistically significant." (p. 450)

Verplanken B. (2004) *International Journal of Nursing Studies*. 41(6):599-605.	"The present study addressed the question how value congruence relates to job satisfaction" (p. 600)	Quantitative; cross-sectional	Hospital surgery ward; nurses; 56	PG; value congruence; job satisfaction, employee attitude, time pressure; positive	"It was expected that job satisfaction would be predicted by ward attitudes. The correlation between these two variables was indeed the largest, but human relations and rational goal value congruence were also significantly correlated with job satisfaction." (p. 602) ... human relations value congruence was significantly correlated with ward attitude ($p<.001$) and job satisfaction ($p<.05$) (p. 603)
Zhang M, Yan F, Wang W, and Li G. (2017) *BMJ Open*. 7(2).	"This study aims to examine the mediation effect of job satisfaction on the relationship between P-O fit and turnover intention" (p. 1)	Quantitative; cross-sectional	Community health facility; community health workers; 656	PO; needs-supplies; turnover intent, job satisfaction; positive	PO fit was significantly positively associated with job satisfaction, and inversely correlated with turnover intent.

*Included studies may have also measured other types of P-E fit eg, P-J or P-V fit, but this was not reported in this table as it is unrelated to the aims of the systematic review.

PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2-3
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	5-7
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	5-7
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	n.a.
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	7-8
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	8
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	8, and appendix
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	8-9
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	8-9
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	9
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	9
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	n.a.
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	n.a.

PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	9-10
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	n.a.
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	10
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	10-11
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	10, and appendix
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	10-14, and appendix
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	n.a.
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	10, and appendix
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	n.a.
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	15-16
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	17
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	17
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	3

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