Title
Structural empowerment is a strong predictor of organisational commitment in nurses: A systematic review and meta-analysis

Short title
Structural empowerment and commitment

Authors
Konstantinos C. FRAGKOS, MSc, MA, PhD
University College London Hospital NHS Foundation Trust, London, UK

Pinelopi MAKRYKOSTA, RN, BSc, MSc
Royal Surrey County Hospital NHS Foundation Trust, Guildford, UK

Christos C. FRANGOS, BSc, MSc, PhD
Greek Research Institute for the Study of Quantitative, Social and Biomedical Problems, Athens, Greece

Author contributions
KCF and PM designed the study, performed statistical analysis and wrote the manuscript. CCF performed statistical analysis and wrote the manuscript.

Funding Statement
This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Corresponding author
Konstantinos Fragkos
University College London Hospitals, GI Services
250 Euston Road, London NW1 2PG, UK
e-mail: constantinos.frangos.09@ucl.ac.uk, Tel. +44 (0) 796 0340489
Twitter: @KCFragkos

Abstract

Aims: The aim of this systematic review and meta-analysis is to explore the relationship between structural empowerment and organisational commitment and to examine a theoretical model under which empowerment could potentially affect organisational performance.
Design: PRISMA guidelines for systematic reviews and meta-analyses were used and quality assessment of articles was performed.
Data sources: Electronic database searches were conducted in Google Scholar, PubMed/Medline, CINAHL, Scopus, and EMBASE from January 1950 till 1 January 2019, which resulted in 204 retrieved studies, published between 1994 and 2018.
Review Methods: A random effects model was used to produce a pooled estimate of effect sizes (correlation coefficient, Cronbach's alpha), with analysis of heterogeneity and publication bias. A meta-analytic structural equation model of the constructs analysed was also performed.
Results: The final review included 22 studies. The meta-analytic means of structural empowerment, organisational commitment, job satisfaction, and psychological empowerment alpha reliabilities were 0.87, 0.84, 0.85, and 0.87, respectively. Heterogeneity but no publication bias was present in these outcomes. Structural empowerment was strongly correlated with organisational commitment (r=0.43). The meta-analytic correlation coefficients of organisational commitment with psychological empowerment and job satisfaction were 0.53 and 0.47, respectively. Structural empowerment was correlated with job satisfaction and psychological empowerment with correlation coefficients of 0.57 and 0.44, respectively. Finally, job satisfaction was correlated with psychological empowerment with a correlation coefficient of 0.53. A meta-analytic structural equation model was tested with good fit which predicted performance (commitment and job satisfaction) from empowerment (structural and psychological).
Conclusion: Structural empowerment is strongly correlated to organisational commitment, and with psychological empowerment, they increase organisational performance. Organisations should attempt to make structural empowerment as widespread as possible in order to create an effective workplace culture.

Impact

What problem did the study address?

- Structural empowerment in nurses is important to help deliver an effective workplace culture in which nurses can be committed and have reduced intention-to-leave.
- Although there is literature examining this relationship, there hasn't been a comprehensive review describing this association and potential heterogeneity, alongside psychometric assessment and relationship to other variables.

What were the main findings?

- Structural empowerment was strongly correlated with organisational commitment.
- Organisational commitment was significantly correlated with psychological empowerment and job satisfaction.
- Structural empowerment was correlated with job satisfaction and psychological empowerment as well.
- A meta-analytic structural equation model with good fit predicted performance (commitment and job satisfaction) from empowerment (structural and psychological).

Where and on whom will the research have impact?

- These results will affect nursing researchers and practitioners.
- Results indicate a need for organisational restructuring that promotes empowerment and formation of theoretical models that connect empowerment to performance.

Key words: systematic review, meta-analysis, nurses, structural empowerment, organisational commitment, job satisfaction, psychological empowerment, structural equation model

Main Paper

1. INTRODUCTION

The issue of how organisational structure elements affect behaviour and effectiveness during professional activities is frequently reflected on by nurses and there is a notion that nurses' professional opinion is often silenced by more experienced dominant voices (Prescott and Dennis 1985, Roberts 2015). This doesn't suggest advocating a situation where unintelligible voices predominate, instead, it poses the query whether this silence occurs solely by being a nurse (i.e. who commonly are in less powerful positions within hospitals compared to doctors for example). This silencing is not a de facto situation that is universally present; in fact, this attitude changes between departments, hospitals, cities or countries (Roberts 2015). Differences in organisational culture can affect organisational performance. This is most evident in nurses with turnover rates being quite high, job satisfaction low and at the centre of all, a sense of powerlessness (Unruh and Zhang , Nei et al. 2015, Munn 2017).
This management premise is what has driven us to examine how aspects of organisational culture affect organisational performance, specifically how structural empowerment influences organisational commitment. We will focus this enquiry on nurses and examine it with a systematic review and meta-analysis.

1.1 Background

Organisational culture
Organisational culture typically aims to explain "the way we do things around here" (Balogun et al. 2016), meaning how people within organisations work towards common goals, by developing common beliefs and values, that distinguish them from other groups (Manley et al. 2011). Weick and Westley (1996) consider culture as the linking process between individual learning and organisational learning through specific, visible, and tangible products of social systems with perceptible benefits on satisfaction, attitudes, perceptions, and opinions of all stakeholders involved with the organisation (Tsai 2011), namely knowledge and skills for its members (Weick and Westley 1996), and eventually positive outcomes for service users (e.g. clients, customers, in healthcare this includes patients) (Kaufman and McCaughan 2013, Mosley 2007).
In healthcare management the word "culture" has more than one meanings. Looking at the workplace, Manley et al. (2011) define workplace culture as an idioculture or subculture of organisational culture and have suggested a framework under which effective workplace culture comes to realisation. They postulate that working towards this effective workplace requires specific enabling factors and attributes which in turn lead to observable consequences. The enabling factors could be individual (e.g. transformational leadership, skilled facilitation, role clarification) or organisational (e.g. flattened and transparent management, enabling approach to leadership and decision-making, organisational readiness, human resource management support). These attributes help fulfil patients', users' and communities' needs in a person-centred way; allow the development, use and sharing of knowledge or evidence; increase staff empowerment and commitment; and ultimately meet the standards, goals and objectives for optimal individual, team and organisational effectiveness. This effect of structures on behaviours is frequently conceptualized as Kanter's (1993) structural empowerment theory.

Structural empowerment

Empowerment is defined as a process that identifies which factors lead to disempowering situations and then proceeds to remove them with the aim to improve employees' self-efficacy (Goedhart et al. 2017). Structural empowerment and psychological empowerment are the two aspects of this concept (Kanter 1993, Laschinger 1996, Spreitzer 1995). According to Kanter's (1993) conceptual model, systemic power factors affect access to job related empowerment structures which in turn has a personal impact on employees and their organisational efficacy. Systemic power factors include formal power features [job definition, discretion (flexible), recognition (visible), and relevance (central)] or informal power features (connections inside the organisation, alliance with: sponsors, peers, subordinates, cross-functional groups, and connections outside the organisation). These features interact with resources and information access and eventually lead to increased self-efficacy, high motivation, increased organisational commitment, lowered burnout level, increased autonomy, decreased occupational stress, increased job satisfaction, and an overall positive organisational and individual wellbeing.

The Conditions for Workplace Effectiveness Questionnaire measures the concept of structural empowerment (Laschinger et al. 2001). The scale consists of 18 items with 6 constructs having 3 items in each construct with acceptable reliability of the whole scale as well subscales (≥ 0.700). The constructs are opportunity (e.g., 'challenging work'), information (e.g., 'information about current state of organisation'), support (e.g., 'things you could improve'), resources (e.g., 'time available for paperwork'), formal power (e.g., 'visibility of work related activities') and informal power (e.g., 'collaborate with other professionals'). This scale has shown to have adequate fit in factor analyses and is strongly correlated to other empowerment scales such as the 2-item Global Empowerment Scale (Yang et al. 2014). As measured with this scale, structural empowerment can lead to increased motivation, sense of confidence, autonomy and positive work related attitudes (job satisfaction, organisational commitment, intention-to-stay, low burnout and increased trust) (Laschinger 1991, Laschinger 1996, Laschinger and Finegan 2005, Laschinger et al. 2001, Laschinger et al. 2009, Laschinger and Shamian 1994, Laschinger et al. 1999, Laschinger et al. 2002).

Psychological empowerment

Spreitzer (1995) defines psychological empowerment as employees' psychological perception or attitude towards their work and organisational roles. It has four cognitive features as its components: meaning, competence, self-determination, and impact. Meaning refers to the alignment between job requirements and beliefs, or the value of a work objective, compared to an individual's own ideals or standards (Li et al. 2018). Competence refers to the confidence individuals have in their abilities to perform activities proficiently, while self-determination relates to the sense of choice or control over employees autonomy during work activities in the workplace (Aggarwal et al. 2018, Avolio et al. 2004). Finally, impact is the sense of ability to influence important work outcomes (Avolio et al. 2004). Various studies have shown that high psychological empowerment level is associated with low stress, burnout and turnover intention, and high organisational commitment and job satisfaction (Ibrahem et al. 2013, Oyeleye et al. 2013, Ouyang et al. 2015, Abel and Hand 2018). The Psychological Empowerment Scale is a 12-item scale measuring the four constructs competence (e.g. 'I am confident about my ability to do my job'), impact (e.g. 'My impact on what happens in my department is large'), meaning (e.g. 'The work I do is very important to me'), and self-determination (e.g. 'I can decide on my own how to go about doing my work') (Spreitzer 1995). Cronbach's alpha has been traditionally reported over 0.800 in multiple studies (Li et al. 2018).

Organisational performance

Organisational performance can be defined as the ability of an organisation to attain its goals and objectives by optimum utilization of resources (Nayak and Sahoo 2015). In terms of job

performance, these can be the actions and behaviours of individuals that contribute to organisational goals (Rotundo 2002, Wong and Laschinger 2013). It can relate more to personal effectiveness when increased self-efficacy, high motivation, increased organisational commitment, lowered burnout level, increased autonomy, decreased occupational stress, increased job satisfaction, organisational commitment, and authentic leadership are noted; or more broadly, work effectiveness when achievement and successes, respect and cooperation in the organisation alongside client satisfaction take place (Wong and Laschinger 2013, Cowden and Cummings 2012, Cicolini et al. 2014, Paplanus et al. 2014, Saber 2014, Flinkman et al. 2017, Goedhart et al. 2017, Numminen et al. 2017, Rosser et al. 2017, Li et al. 2018). Two important aspects of performance we focus on in the present review, are organisational commitment and job satisfaction.

Organisational commitment

Organisational commitment refers to the extent to which an organisation's employees see themselves as belonging to the organisation (or parts of it) and feel attached to it (Meyer et al. 2013, Meyer and Allen 1991, Meyer et al. 1993, Kanning and Hill 2013). Organisational commitment has three distinctive elements (Allen and Meyer 1990): affective commitment, which expresses employees' emotional attachment e and has three core values (belief and acceptance of organisational goals and values, readiness to support the organisation, and a strong need to maintain organisational membership/citizenship) (Mowday et al. 1979); normative commitment, which reflects employees' obligation towards the organisation; and continuance commitment, which is driven by avoiding impending costs that would be linked to a possible change of employer (Allen and Meyer 1990, Meyer et al. 1993, Meyer et al. 2013, Meyer et al. 2003). Continuance and normative commitment are more cognitively driven in the sense that they weigh the benefits of remaining with an existing organisation against the costs of joining another employer (e.g. salary loss, pension claims loss, new network of people etc.) (Kanning and Hill 2013).

Organisational commitment (mostly affective) has been positively correlated to motivation, organisational citizenship behaviour, job satisfaction, performance and productivity, and intent to stay (Laschinger 1996, Motwani et al. 1999, Cowden and Cummings 2012, Saber 2014, Goedhart et al. 2017), whilst negative correlations have been noted with absences and fluctuation (Kanning and Hill 2013).

Organisational commitment is frequently measured with the Organisational Commitment Questionnaire affective commitment subscale (Meyer and Allen 1991, Meyer et al. 1993). This subscale consists of 8 items measured on a seven-point Likert scale, with Cronbach's alpha over 0.800 in most papers throughout the nursing literature (Aggarwal et al. 2018, Cowden and Cummings 2015, Laschinger et al. 2002, McDermott et al. 1996, Wilson and Laschinger 1994).

Job satisfaction

Job satisfaction is defined as the difference "between how much an employee wants or expects from the job and how much the person actually gets" (Wagner et al. 2013). Nurses' job satisfaction has been associated with professional, personal and organisational variables (Lu et al. 2005) and is moderated by their working environment and personal characteristics (Adams and Bond 2000). In general, job satisfaction is related to increase retention and is a positive consequence of workplace empowerment (structural or psychological) (Cicolini et al. 2014, Li et al. 2018). Frequently used measurement scales are the Job Satisfaction Scale or the Minnesota Satisfaction Questionnaire, with reliabilities over 0.700 and satisfactory factor analysis structures (Li et al. 2018).

Areas that need further grounding in structural empowerment research
Although there are multiple empirical studies examining constructs associated with structural empowerment, there has been no systematic review examining the association of organisational commitment specifically with structural empowerment. Previous reviews have focused on the relationship between structural empowerment and psychological empowerment, job satisfaction or quality improvement (McMurray 2010, Parsons and Cornett 2011, Cowden and Cummings 2012, Cicolini et al. 2014, Saber 2014, Goedhart et al. 2017, Li et al. 2018). It is important to examine this relationship within the context of the psychometric properties of the scales used to measure these constructs alongside potential moderators of this association. Finally, since organisational commitment and structural empowerment are part of organisational performance and organisational culture, respectively, investigating this relationship can provide further insight toward a conceptual model between these overarching constructs.

2. THE REVIEW

2.1 Aims
The aim of this review is to examine whether structural empowerment is significantly related to organisational commitment, based on a systematic review and meta-analysis. Specifically, we aim to answer:

1. How does structural empowerment affect organisational commitment in nurses?
2. What moderators affect this relationship?
3. Can a model be examined and subsequently proposed that potentially explains the impact of structural empowerment on organisational commitment?

2.2 Design
Based on the aims and the research questions above, a review of the literature in a systematic manner and quantitative synthesis of the available data was deemed the most robust approach. The advantage of quantitative synthesis is the production of an overall effect size after statistically combining all studies, instead of using vote counting methods (Hedges and Olkin 1980). PRISMA guidelines for systematic reviews and meta-analyses were used (Moher et al. 2009).

2.3 Search methods
Electronic database searches were conducted in Google Scholar, PubMed/Medline, CINAHL, Scopus, and EMBASE with no year limits (January 1950 till 1 January 2019). Publisher databases were also searched (Sciencedirect.com, link.springer.com, Wiley Library Online, Highwire press and Nature.com). The keywords for searching were: empowerment, commitment, nurse, organisation, healthcare, culture, performance, structural, workplace, correlation, path analysis, model. The date of search was 1 January 2019. The bibliographies from all included manuscripts and hand-searching of relevant healthcare management or nursing journals were used to identify further references. Examples of the search strategy are provided in the Supplementary Materials.

2.4 Study eligibility criteria
The inclusion criteria were any quantitative study that examined structural empowerment in relation to organisational commitment. Structural empowerment had to be measured with the scale Conditions for Work Effectiveness Questionnaire (original or revised version) (Laschinger and Shamian 1994, Laschinger et al. 2001). This scale was chosen to remain as homogenous as possible to the concept of structural empowerment and this particular scale has

a large amount of research surrounding it (Goedhart et al. 2017). The study sample should include only nurses. The study needed to report basic survey characteristics and correlations between the two main outcomes.
Exclusion criteria included other conceptualisations of structural (or workplace) empowerment such as the Qualities of Empowered Nurse Scale (Kuokkanen and Katajisto 2003, Kuokkanen et al. 2003). Studies were excluded when they reported only other types of empowerment in relation organisational commitment, with main reference to psychological empowerment. Next, others sample types (e.g. nursing students, healthcare assistants, nursing assistants, allied healthcare professionals, doctors, non-healthcare participants) were excluded. Finally, studies with the same dataset with an already included study, qualitative studies, case studies, reviews, editorials, and opinion papers were excluded.

2.5 Search outcomes

The initial search revealed 204 studies which after applying the inclusion criteria where reduced to 23, after checking the title, abstract and full texts (Wilson and Laschinger 1994, McDermott et al. 1996, Laschinger et al. 2002, Laschinger and Finegan 2005, Cho et al. 2006, DeCicco et al. 2006, Park et al. 2006, Laschinger et al. 2009, Spence Laschinger et al. 2009, Young-Ritchie et al. 2009, Ahmad and Oranye 2010, Chang et al. 2010, Smith et al. 2010, Ibrahem et al. 2013, Yang et al. 2013, Dahinten et al. 2014, Yang et al. 2014, Cowden and Cummings 2015, Freire and Azevedo 2015, Choi and Ahn 2016, Eskandari et al. 2017, Aggarwal et al. 2018, Church et al. 2018). One study was further excluded during analysis, because of an extremely small standard deviation (Park et al. 2006). Hence, the final number of studies was 22. The flow chart is shown in Supplementary Figure 1 and study information for included studies is shown in Table 1.

---Table 1 here---

2.6 Quality appraisal

All articles were screened for quality using the published Quality Assessment and Validity Tool for Correlational Studies (Wagner et al. 2010, Cicolini et al. 2014, Li et al. 2018). The instrument included 13 questions to scrutinize and score the research design, sample, measurement and statistical analysis of the studies. The questions were in dichotomous answer format and a total of 14 points could be assigned for the 13 criteria. Twelve items were scored as 0 (=not met) or 1 (=met) and the item related to outcome measurement was scored 0 or 2. Based on scores assigned, the instrument classifies the articles into three quality categories: low (0-4), medium (5-9) and high (10-14).

2.7 Data abstraction

The resulting studies (in abstract form) were assessed against the inclusion criteria. When there was insufficient information available in the abstract, the full text was reviewed. The extracted data from the selected studies were: *Demographics*: author, year of publication, study aim, main results, type of analysis, type of subjects, country, continent, sample size, mean age, female percentage; *Scales and constructs*: Constructs measured, scale used, reliability (Cronbach's alpha), number of items, mean, standard deviation; and the *correlation matrix between constructs.*

2.8 Synthesis

During meta-analysis, the correlation coefficient was converted to the Fisher's *Z* and all analyses were performed using the transformed values. Effect size values of 0.10, 0.30, and 0.50 were considered small, moderate, and large effects, respectively (Cohen 1992). Regarding

reliability coefficients (Cronbach's alpha), the Rodriguez-Maeda method was adopted to normalise the alpha coefficient by transforming it to the Hakstian-Whalen $T = (1 - a)^{1/3}$, which is a variable with standard normal distribution (Rodriguez and Maeda 2006, Hakstian and Whalen 1976). The standard score for each scale is defined as its mean score divided by standard deviation.

A random effects model was used to produce a pooled estimate of the effect sizes. Heterogeneity was quantified using the I^2 statistic (Higgins et al. 2003). Heterogeneity was further investigated with subgroup analysis and meta-regression. Publication bias was assessed using funnel plots, Egger's test, Begg's test, Rosenthal's number and the trim-and-fill method (Begg and Mazumdar 1994, Egger et al. 1997, Sterne et al. 2011, Fragkos et al. 2014, Duval and Tweedie 2000). In the present study, the funnel plots depict the Hakstian-Whalen T or Fisher's Z against the study's sample size, since the standard error of both these effect sizes is dependent of the effect size or the sample size (Hunter et al. 2014, Sterne and Egger 2001). Meta-analyses were performed with R 3.5.1.

The final analysis included a meta-analytic structural equation model of the constructs analysed. The complete weighted correlation matrix was 4×4 and it was submitted to structural equation modelling analyses with AMOS 25.0. It includes the observed variables structural empowerment (exogenous), organisational commitment (endogenous), psychological empowerment (endogenous) and job satisfaction (endogenous), with no latent variables. The predicted model was fitted assuming the harmonic mean as sample size (Viswesvaran and Ones 1995) and it was estimated with maximum-likelihood estimation. Model fit was measured using goodness-of-fit indices [comparative fit index (CFI), root mean square error of estimation (RMSEA), Tucker-Lewis Index (TLI), Normed Fit Index (NFI), the Goodness-of-Fit Index (GFI) and the standardized χ^2 (χ^2/df)] (Hu and Bentler 1999). It is typically assumed that models with a good fit have CFI, TLI, NFI, GFI≥0.90 (ideally over 0.95), RMSEA<0.08 and $\chi^2/df \leq 3$ (Cheung and Cheung 2016, Hedges 2016, Sheng et al. 2016, Wilson et al. 2016, Bagozzi and Yi 1988).

3. RESULTS

3.1 Descriptive results

The total sample size was 10912 nurses (range 92-3156), the mean age was 36.3 years (range 27.0-45.7), and on average the sample was mostly female (91.8%, range 53-100%). Most studies took place in North America (mainly Canada) (n=13) (Church et al. 2018, Cowden and Cummings 2015, Dahinten et al. 2014, Smith et al. 2010, Young-Ritchie et al. 2009, Spence Laschinger et al. 2009, Laschinger et al. 2009, DeCicco et al. 2006, Cho et al. 2006, Laschinger and Finegan 2005, Laschinger et al. 2002, McDermott et al. 1996, Wilson and Laschinger 1994), followed by Asia (n=7) (Aggarwal et al. 2018, Eskandari et al. 2017, Choi and Ahn 2016, Yang et al. 2014, Yang et al. 2013, Chang et al. 2010, Ahmad and Oranye 2010).

3.2 Study quality

Quality assessment for each study is shown in Supplementary Table 1 and the summary graphs for each quality assessment tool are shown in Supplementary Figure 2. The main sources of bias were lack of prospective studies (95%), lack of probability sampling (86%), no reporting of sample size justification (59%), protection of anonymity was not reported in most studies (72%), and no study reported on management of outliers. The strong elements of studies were multi-site sampling (82%) and rigorous analysis based on reliable measurement tools and a theoretical framework (95%). The median score was 9 (range 7-12) and most studies were of medium quality (59%), followed by high quality (41%).

3.3 Psychometric properties

Structural empowerment
Structural empowerment was measured with Conditions for Work Effectiveness Questionnaire (I or II) (Laschinger et al. 2001, Chandler 1986). The reported alpha reliabilities ranged from 0.778 to 0.940 from 20 studies. The standard score ranged from 2.51 to 9.39 and its mean was 5.45. The meta-analytic mean of structural empowerment's alpha was 0.873 (95% CI 0.853-0.891, I^2=96%, p<0.01) (Supplementary Figure 3A). There was no evidence of publication bias from the funnel plot and trim-and-fill analysis didn't suggest the addition of additional studies (Supplementary Figure 3E). Finally, the fail-safe number was 247130 (over the limit of 110 studies) and Egger's and Begg's test p-values were non-significant (p=0.653 and 0.229, respectively).

Organisational commitment
Organisational commitment was measured with scales by Meyer and Allen (1991) (n=15), Mowday et al. (1979) (n=4), Lin et al. (2001) (n=2), Chang and Chi (2006) (n=1), and Williams and Cooper (1998) (n=1). The reported alpha reliabilities ranged from 0.650 to 0.930. The standard score ranged from 2.31 to 6.87 and its mean was 4.32. The meta-analytic mean of organisational commitment's alpha was 0.837 (95% CI 0.801-0.869, I^2=98%, p<0.01) (Supplementary Figure 3B). There was some asymmetry in the funnel plot with some evidence of publication bias from the funnel plot and trim and fill analysis suggested the addition of three additional studies (Supplementary Figure 3F). However, the fail-safe number was 168244 (over the limit of 95 studies), and Egger's and Begg's test p-values were non-significant (p=0.166, and 0.410 respectively).

Job satisfaction
Job satisfaction was measured with eight different scales (Table 1). The reported alpha reliabilities ranged from 0.770 to 0.940. The standard score ranged from 3.09 to 9.38 and its mean was 6.25. The meta-analytic mean of job satisfaction's alpha was 0.850 (95% CI 0.762-0.914, I^2=99%, p<0.01) (Supplementary Figure 3C). No funnel plot or publication bias test were assessed because this outcome has less than ten studies. The fail-safe number was 27262 (over the limit of 40 studies).

Psychological empowerment
Psychological empowerment was measured with the scale by Spreitzer (1995) (n=9). The reported alpha reliabilities ranged from 0.830 to 0.901. The standard score ranged from 3.66 to 7.94 and its mean was 6.42. The meta-analytic mean of psychological empowerment's alpha was 0.867 (95% CI 0.842-0.889, I^2=90%, p<0.01) (Supplementary Figure 3D). No funnel plot or publication bias tests were assessed because this outcome has less than ten studies. The fail-safe number was 35889 (over the limit of 50 studies).

3.4 Correlations
All outcomes indicated a moderate to strong correlation between constructs, with the highest being between structural empowerment and job satisfaction (r=0.570) and the lowest being organisational commitment and structural empowerment (r=0.434). There was increased heterogeneity with all effect sizes (I^2 >90%) (Table 2). As indicated from the symmetrical funnel plots, the very high fail-safe numbers and the non-significant p-values from Egger's or Begg's test, publication bias possibility was low for all outcomes. The respective forest and funnel plots for each association are shown in Figure 1.

---Table 2 here---
---Figure 1 here---

Subgroup analyses
We performed subgroup analysis for the analysis of heterogeneity in the correlation between organisational commitment and structural empowerment, because these two variables were key to the inclusion criteria and, additionally, offered the most studies to perform such an analysis. Subgroup analysis was performed in terms of continent, organisational commitment scale used, and quality assessment classification. In terms of continent, only the European studies had a homogeneous result with I^2=0%, whilst in other continents the results remained highly heterogeneous with I^2>50% (Supplementary Figure 4A). None of the other subgroups managed to identify a source for the observed heterogeneity, since for all subgroups in terms of organisational commitment scale or quality assessment, the results remained highly heterogeneous with I^2>50% (Supplementary Figure 4B, 4C).
Meta-regression of the continuous variables female percentage and mean age was also performed to rule them out as sources of heterogeneity (Supplementary Table 2). Essentially, both these variables were not statistically significant from the analysis and failed to explain the heterogeneity in the effect size [I^2 (residual heterogeneity / unaccounted variability)=92%; R^2 (amount of heterogeneity accounted for)=0%; test for residual heterogeneity: p<0.0001].

Cumulative meta-analysis and sensitivity analysis
We next examined how stable the correlation between organisational commitment and structural empowerment was over the time period of the included publications (cumulative meta-analysis) and whether any study has a major influence on the results. After 2005, when the overall correlation was 0.498, there is minimal fluctuation around the overall mean 0.434, which indicates that the overall correlation is essentially stable now and is not expected change over time (Supplementary Figure 5A). Next, the sensitivity analysis results indicated that there is no influential study and when omitting one study at a time, the overall mean doesn't alter significantly from the reported 0.434 (Supplementary Figure 5B).

3.5 Structural equation model

The hypothesized Model 1 had moderate fit (Table 3, Figure 2A). This model explained 19.4% in the variance of psychological empowerment, 42.4% of job satisfaction and 30.5% of organisational commitment. The estimates for the paths were all significant (Supplementary Table 3). Due to the inadequate fit of Model 1, we tested a second model based on the idea that structural empowerment and psychological empowerment form a latent variable called Empowerment and organisational commitment and job satisfaction are part of the same concept named Performance. This second model performed quite better with higher CFI=0.997 and RMSEA=0.063, both within suggested ranges (Table 3). The standardized χ^2 reduced to 12.6, indicating better fit compared to Model 1. This did not reach less than 3, but it is very sensitive to sample size (Hu and Bentler 1999). In Model 2, Empowerment explained almost 100% of Performance and the estimate of Empowerment on Performance is β=0.729 (p<0.001) (Figure 2B).

---Table 3 here---
---Figure 2 here---

3.6 Mediators of the relationship between organisational commitment and structural empowerment

Based on the systematic review, private or public hospitals moderate the effect of empowerment to commitment, while psychological empowerment was a strong mediator of structural empowerment to commitment (Aggarwal et al. 2018). More experienced nurses (having worked longer at one place) were more likely to be more empowered which led to more commitment (Ibrahem et al. 2013, Eskandari et al. 2017, Chang et al. 2010). Structural empowerment increases organisational commitment through job satisfaction (Cowden and Cummings 2015), but also affects organisation commitment directly and possibly moderated by educational interventions (Dahinten et al. 2014). Other studies showed organisational commitment is influenced positively by structural empowerment through the nursing environment (Yang et al. 2013), job satisfaction moderates the effect of structural empowerment on commitment, with a larger effect through job satisfaction than on commitment itself (Laschinger et al. 2009).

Next, at unit level, leader-member exchange quality had a significant direct effect on structural empowerment, which in turn had a significant direct effect on individual-level nurses' psychological empowerment and job commitment (Laschinger et al. 2009). Generally, a more empowered a nurse was more engaged with work and less exhausted and hence more committed (Cho et al. 2006). Finally, empowerment also affected respect, trust, and justice before affecting commitment (Laschinger and Finegan 2005).

4. DISCUSSION

The present meta-analysis identified 22 studies that examined the relationship between structural empowerment and organisational commitment. This was a positive strong correlation of 0.434 ($p<0.05$). In the structural equation model, psychological empowerment and structural empowerment form part of the concept of empowerment and affect performance, namely job satisfaction and organisational commitment. This result is theoretically interesting since it indicates that essentially structural empowerment and psychological empowerment are more or less conceptually related and that this relation is what affects organisational commitment. This comes in contrast with the established theory that psychological empowerment is a mediator between organisational commitment and structural empowerment (Laschinger 1996, Dahinten et al. 2014). These results address research questions 1 and 3. The interpretation here suggests that structural and psychological empowerment might actually be the different sides of the same coin and what leads to better outcomes (commitment, performance, intention to stay, less turnover) is essentially empowerment at any level but with both aspects necessarily present. Through the meta-analytic structural equation model, it is not always possible to capture all available moderators with the same flexibility a well-designed cross-sectional study of nurses may permit.

In terms of moderators of the relationship between structural empowerment and organisational commitment (Research Question 2), continent, scale used for organisational commitment, quality assessment, age, and gender distribution were not overall statistically significant. Only European studies had no heterogeneity. This could be attributed to it being only two studies. Varying populations, sample sizes, backgrounds, organisational systems and national cultures might be the root cause for the different results obtained (Li et al. 2018). Furthermore, the inconsistencies in findings may be attributed to the different organisational commitment scales used in the studies. The heterogeneous results of the studies require analyses of many more moderators, if possible.

Other moderators identified from the systematic review were nursing experience, trust, leadership quality and educational interventions. It is generally accepted that a good manager and leader results in higher clinical nurses' perceptions of shared decision making, supervisor support, nurses' ability to practice autonomously, personal empowerment, adequate staffing levels, work group cohesion, and praise and recognition received, ultimately reducing moral distress (Cowden and Cummings 2015). This finding is also associated with more years of nursing experience, which is associated with higher salaries and more decision making delegated to nursing staff (Eskandari et al. 2017). Educational interventions with a management/leadership focus have had a similar effect with the presence of positive leadership and many years of nursing experience (Dahinten et al. 2014). Ultimately, these moderators affect directly or indirectly nurse intention-to-stay (Cowden and Cummings 2015).

4.1 Recommendations for practitioners

The results of this review can provide recommendations to nurses and nursing managers, by developing practices that foster empowerment and essentially increase performance, through commitment, satisfaction, intention to stay and less turnover. At an individual level, nursing staff can seek management education through any possible opportunities that arise. Leaflets can be made available through ward announcement boards or hospital intranet forums which indicate local hospital courses, national or international continuing professional development activities, and postgraduate courses on healthcare leadership or management topics. Next, nursing managers could apply more effort in clarifying to nurses the formal power features [job definition, discretion (flexible), recognition (visible), and relevance] as well as informal power features (connections inside the organisation, alliance with: sponsors, peers, subordinates, cross-functional groups, and connections outside the organisation), which are they key tenets of Kanter's (1993) model. These features interact with resources and information access and eventually increase positive outcomes such as performance, commitment, or satisfaction. Many of these structural features are sometimes considered as information nursing staff are not necessarily privy to but are more or less a result of organisational favouritism (Cleary et al. 2013). This can be addressed by nominated cultural changes, such as flexible approach to nursing, better staff relations, stop blaming and finger-pointing, promote meritocracy rather than favouritism or promotion by time served, and encourage managers to be supportive of staff. This of course requires most likely a top down approach in changes since nursing managers will need senior nursing leadership to accept and adopt these principles in order to allow changes.

4.2 Limitations

Certain limitations exists with the structural equation model. This study focuses on the correlation between structural empowerment and organisational commitment as a starting point for finding the studies. Studies that don't report this correlation are excluded. However in the structural equation model, six pairwise correlations were considered between all four variables. The ideal approach would be to perform systematic reviews of each of these outcomes separately so as to accumulate as many studies as possible for each correlation, and subsequently analyse this with structural equation model. Another important limitation is the presence of heterogeneity in meta-analysis. No source of heterogeneity was identified apart from the fact that European studies were homogeneous. Finally, certain limitations stem from the design of the individual studies which were mostly non-prospective and did not use probability sampling. The heterogeneous results suggest the need for standardisation of the scale in other countries and longitudinally. This will potentially allow to fine tune the scale for different systems and allow for more homogeneous analyses. One cannot help but suppose that

the lack of use of this questionnaire in European settings reflects that structural empowerment as a notion is still potentially infant in the professional settings of European nursing healthcare establishments.

5. CONCLUSION

In conclusion, this is the first meta-analysis to examine the relationship between structural empowerment and organisational commitment and subsequently examine a model involving two further variables (namely psychological empowerment and job satisfaction). Results suggested a moderate to strong relationship between the two main concepts and the model suggested that empowerment (a concept resulting from both types of empowerment) affects performance (job satisfaction + organisational commitment). The other model examined did not have good fit. In our opinion, the results are novel and offer some ground for further interpretation of the complex aspects of structural empowerment. Future research should focus on more studies examining structural empowerment, especially in European countries, further analyses of moderators between the relationship of between structural empowerment and organisational commitment, and potentially examining the similarity and differences between the established theories and scales of workplace/structural empowerment.

CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

FIGURE AND TABLES

Table 1. Studies included in the present review.

Study	Country, Design, Subjects	Aim	Main Results	Type of analysis	Construct (reference for scale used, Cronbach's alpha, mean and standard deviation)	Correlations with Structural empowerment (value, p-value)	Correlations with Organisational Commitment (value, p-value)	Moderators between structural empowerment and organisation commitment
Church *et al.* (2018)	USA, Cross-sectional, newly licensed registered nurses (n=1498, females 86.5%, mean age 29.2 years old)	To determine the effect of autonomy, competence, group cohesion, structural empowerment, and job satisfaction on organizational commitment, turnover intent, and actual job turnover	• At one year post-residency, turnover intent was low • Group cohesion, job satisfaction, and structural empowerment had a significant effect on organizational commitment. Organizational commitment had a significant effect on turnover intent. The results showed the proposed path model was not a good fit for this sample of (CFI = 0.87, TLI = 0.79)	Pearson's correlation coefficients, structural equation modelling	Organisational Commitment (Mowday *et al.*, 1979) [α = 0.91, mean (SD) = 5.46 (10.7)] Structural Empowerment (Laschinger *et al.*, 1999) [α = 0.83, mean (SD) = 22.13 (3.13)] Job Satisfaction (Hinshaw and Atwood, 1983) [α = 0.77, mean (SD) = 3.75 (0.4)] Autonomy (Schutzenhofer, 1987) [α = 0.91, mean (SD) = 56.57 (10.4)] Group Cohesion (Good and Nelson, 2016) [α = 0.90, mean (SD) = 35.24 (5.45)] Competence (Wandelt and Stewart, 1975) [α = 0.99, mean (SD) = 3.96 (0.32)] Turnover Intent (Single-item scale, "Do you plan to leave this facility in the next year?") [mean (SD) = 2 (1.36)] Actual Job Turnover (single item) [mean (SD) = 1.08 (0.28)]	0.32 (p<0.001) --- 0.44 (p<0.001) 0.37 (p<0.001) 0.47 (p<0.001) 0.30 (p<0.001) -0.25 (p<0.001) 0.01 (p=0.699)	--- --- 0.31 (p<0.001) 0.16 (p<0.001) 0.29 (p<0.001) 0.16 (p<0.001) -0.43 (p<0.001) 0.03 (p=0.246)	None reported
Aggarwal *et al.* (2018)	India, Cross-sectional, nurses working in public and private hospitals operating in Punjab (n=389, age and female percentage not reported)	To test the mediation role of women's psychological empowerment on the relationship between structural empowerment and employee's organizational commitment	• Psychological empowerment mediates all the proposed relationship between different dimensions of structural empowerment and affective commitment. • Indian nurses experienced high level of structural empowerment which further leads to high commitment.	Pearson's correlation coefficients, structural equation modelling	Organizational Commitment (Allen and Meyer, 1990) [mean (SD) = 3.11 (0.99)] Structural Empowerment (Laschinger *et al.*, 2001) [mean (SD) = 3.22 (1.01)] Psychological Empowerment (Spreitzer, 1995) [mean (SD) = 3.51 (0.96)]	0.077 (p=0.130) --- 0.183 (p<0.001)	--- --- 0.714 (p<0.001)	• Private or public hospitals moderate the effect of empowerment to commitment • Psychological empowerment was a strong mediator of structural empowerment to commitment
Eskandari *et al.* (2017)	Iran, Cross-sectional, nurses working in Zanjan hospitals (n=491, females 90%, mean age 30.7 years old)	To examine the relationship between structural empowerment and organizational commitment of nurses	• The perception of nurses working in hospitals on structural empowerment was moderate • Nurses believed opportunity as the most important element in structural empowerment • Nurses working in non-academic hospitals and in non-teaching hospitals had higher organizational commitment than others • There was a significant relationship between structural empowerment and organizational commitment.	Pearson's correlation coefficients, ANOVA, linear regression analysis	Organisational Commitment (Meyer and Allen, 1991) [mean (SD) = 9.59 (2.07)] Structural Empowerment (Laschinger *et al.*, 2001) [α = 0.89, mean (SD) = 15.87 (3.30)]	0.444 (p<0.001) ---	--- ---	More experienced nurses (having worked longer at one place) more likely to be more empowered which led to more commitment (p<0.05)
Choi and Ahn (2016)	South Korea, Cross-sectional, registered nurses (n=273, female percentage not reported, mean age 28.2 years old)	To examine the mediating effect of empowerment in the relationship of nurse managers' authentic leadership, with nurses' organizational commitment and job satisfaction	• Significant correlations among authentic leadership, empowerment, organizational commitment and job satisfaction • Empowerment showed perfect mediating effects in the relationship between authentic leadership and organizational commitment and partial mediating effects in the relationship between authentic leadership and job satisfaction	Pearson's correlation coefficients, linear regression analysis	Organizational Commitment (Mowday *et al.*, 1979) [α = 0.90, mean (SD) = 3.88 (0.74)] Structural Empowerment (Laschinger *et al.*, 2001) [α = 0.90, mean (SD) = 18.89 (2.71)] Authentic Leadership (Walumbwa *et al.*, 2007) [α = 92, mean (SD) = 2.61 (0.48)] Job Satisfaction (Park, 2005) [α = 0.91, mean (SD) = 3.04 (0.45)]	0.70 (p<0.001) --- 0.50 (p<0.001) 0.66 (p<0.001)	--- --- 0.36 (p<0.001) 0.66 (p<0.001)	None reported
Freire and Azevedo (2015)	Portugal, Cross-sectional, registered nurses (n=189, females	To analyse the impact of workplace empowerment and staff nurses' perceptions of trustworthiness in their	• An empowering work context was significantly predictive of nurses' affective commitment and on the	Pearson's correlation coefficients, structural equation modelling	Organisational Commitment (Meyer and Allen, 1991) [α = 0.80, mean (SD) = 9.16 (1.58)] Structural Empowerment (Laschinger *et al.*, 2001) [α = 0.78, mean (SD) = 18.78 (4.76)]	0.229 (p=0.002) ---	--- ---	No moderator empowerment and commitment

Study	Country, Design, Subjects	Aim	Main Results	Type of analysis	Construct (reference for scale used, Cronbach's alpha, mean and standard deviation)	Correlations with Structural empowerment (value, p-value)	Correlations with Organisational Commitment (value, p-value)	Moderators between structural empowerment and organisation commitment
	74.6%, mean age 35.3 years old)	supervisor as determinants of organizational commitment	perceptions of trustworthiness of the supervisor • CFI 0.99. Good model fit		Trustworthiness (Freire, 2010) [α = 0.87, mean (SD) = 10.32 (2.41)]	0.505 (p<0.001)	0.140 (p=0.0055)	
Cowden and Cummings (2015)	Canada, Cross-sectional, full-time and part-time registered nurses and licensed practical nurses (n=415, female percentage not reported, mean age 41.9 years old)	To verify a complex theoretical model of nurses' intention to stay that includes both affective and cognitive determinants and to explore the influence of relational leadership on staff nurses' intention to stay	• The model explained 63% of variance in nurses' intention to stay • Organizational commitment, empowerment, and desire to stay were the model concepts with the strongest effects on nurses' intention to stay • Leadership practices indirectly influenced nurses' intention to stay	Pearson's correlation coefficients, structural equation modelling	Organizational commitment (Meyer *et al.*, 1993) (all Cronbach's α ranged from 0.71 to 0.94) Structural Empowerment (Laschinger *et al.*, 2001; Laschinger and Finegan, 2005) Job satisfaction (Quinn and Shephard, 1974) Shared decision making (Leiter and Maslach, 1999) Supervisor support (Maslach *et al.*, 1996) Autonomy (Ginsburg *et al.*, 2005) Time to nurse Quality of care (Aiken and Patrician, 2000) Staffing Work group cohesion (1) Work group cohesion (2) Joy Praise and recognition Moral distress Desire to stay Leadership (Estabrooks *et al.*, 2009) Work status Position Preference Opportunity elsewhere Career development Abuse Age Tenure Education	0.38 (p<0.001) --- 0.51 (p<0.001) 0.37 (p<0.001) 0.52 (p<0.001) 0.44 (p<0.001) 0.27 (p<0.001) 0.31 (p<0.001) 0.32 (p<0.001) 0.36 (p<0.001) 0.48 (p<0.001) 0.30 (p<0.001) 0.44 (p<0.001) -0.36 (p<0.001) 0.40 (p<0.001) 0.54 (p<0.001) 0.48 (p<0.001) 0.08 (p=0.104) 0.10 (p=0.042) 0.07 (p=0.155) 0.43 (p<0.001) -0.08 (p=0.104) 0 (p=0.99) 0 (p=0.99) 0.04 (p=0.461)	--- --- 0.42 (p<0.001) 0.23 (p<0.001) 0.27 (p<0.001) 0.27 (p<0.001) 0.12 (p=0.014) 0.01 (p=0.839) 0.17 (p=0.001) 0.33 (p<0.001) 0.44 (p<0.001) 0.28 (p<0.001) 0.28 (p<0.001) -0.29 (p<0.001) 0.58 (p<0.001) 0.57(p<0.001) 0.24 (p<0.001) -0.04 (p=0.416) -0.04 (p=0.416) 0.01 (p=0.839) 0.25 (p<0.001) -0.02 (p=0.685) 0.09 (p=0.067) -0.15 (p=0.002) -0.06 (p=0.223)	Structural empowerment increases organisational commitment through job satisfaction
Dahinten *et al.* (2014)	Canada, quasi-experimental, pre-test–post-test design, staff nurses working with nurse leaders who received an education program (n=129, females 98%, mean age 45.7 years old)	To determine whether nurse leaders' attendance at a leadership development programme based on an empowerment framework would increase staff perceptions of organisational support and organisational commitment	• Leaders' programme participation was directly associated with greater staff organisational commitment 1 year after the programme • Both programme attendance and leader-empowering behaviours were found to act as independent catalysts for staff empowerment	Pearson's correlation coefficients, multiple regression analysis	Organisational Commitment (Meyer and Allen, 1991; Meyer *et al.*, 1993) [α = 0.83, mean (SD) = 4.2 (1.19)] Structural Empowerment (Laschinger *et al.*, 2001) [α = 0.89, mean (SD) = 3.28 (0.57)] Psychological Empowerment (Spreitzer, 1995) [α = 0.85, mean (SD) = 3.92 (0.50)] Leader Empowering Behaviors (Hui, 1994) [α = 0.0.98, mean (SD) = 4.98 (1.14)] Perceived Organisational Support (Rhoades and Eisenberger, 2002) [α = 0.90, mean (SD) = 4.59 (1.27)]	0.465 (p<0.001) --- 0.455 (p<0.001) 0.505 (p<0.001) 0.46 (p<0.001)	--- --- 0.36 (p<0.001) 0.335 (p<0.001) 0.485 (p<0.001)	Structural empowerment affects organisation commitment directly and possibly moderated by the intervention
Yang *et al.* (2014)	China, Cross-sectional, staff nurses (n=524, females 97.7%, mean age 30.2 years old)	To examine the level of structural empowerment, organizational commitment and job satisfaction in Chinese nurses; and to investigate the relationships among the three variables	• Moderate levels of the three variables were found in this study • Both empowerment and commitment were found to be significantly associated with job satisfaction • Work objectives, resources, support and informal power, normative and ideal commitment were significant predictors of job satisfaction	Pearson's correlation coefficients, multiple stepwise regression analysis	Organisational Commitment (Lin *et al.*, 2001) [α = 0.85, mean (SD) = 14.38 (3.07)] Structural Empowerment (Laschinger *et al.*, 2001) [α = 0.94, mean (SD) = 13.36 (3.54)] Job Satisfaction (Weiss and Davis, 1967) [α = 0.94, mean (SD) = 2.95 (0.75)]	0.63 (p<0.001) --- 0.72 (p<0.001)	--- --- 0.69 (p<0.001)	No moderators examined
Yang *et al.* (2013)	China, Cross-sectional, staff nurses (n=608, females 97.2%, mean age 30.1 years old)	To integrate structural empowerment theory with magnet hospital characteristics and provide evidence on the relationships between structural empowerment, professional practice environments and organizational commitment	• Professional practice environments partially mediated the relationship between empowerment and organizational commitment	Pearson's correlation coefficients, structural equation modelling	Organisational Commitment (Lin *et al.*, 2001) [α = 0.93, mean (SD) = 2.88 (0.48)] Structural Empowerment (Laschinger *et al.*, 2001) [α = 0.92, mean (SD) = 2.56 (3.21)] Environment (Lake, 2002) [α = 0.94, mean (SD) = 2.56 (0.45)]	0.55 (p<0.001) --- 0.53 (p<0.001)	--- --- 0.48 (p<0.001)	Organisational commitment is influenced positively by structural empowerment through the nursing environment
Ibrahem *et al.* (2013)	Egypt, Cross-sectional, staff nurses (n=150,	To assess relationships between structural and		Pearson's correlation coefficients, ANOVA	Organizational Commitment (Meyer and Allen, 1991) [α = 0.844, mean (SD) = 4.23 (1.83)]	0.28 (p<0.001)	---	No moderators examined

Study	Country, Design, Subjects	Aim	Main Results	Type of analysis	Construct (reference for scale used, Cronbach's alpha, mean and standard deviation)	Correlations with Structural empowerment (value, p-value)	Correlations with Organisational Commitment (value, p-value)	Moderators between structural empowerment and organisation commitment
	female percentage not reported, mean age 37.5 years old)	psychological empowerment and their effects on hospital nurses' organizational commitment	• Overall psychological empowerment was higher (68.75%) than overall structural empowerment (46.25%) • Organizational commitment was significantly correlated with age (r=0.260)		Structural Empowerment (Laschinger *et al.*, 2001) [α = 0.787, mean (SD) = 2.84 (1.13)] Psychological Empowerment (Spreitzer, 1995) [α = 0.849, mean (SD) = 3.75 (0.98)]	--- ---	--- 0.57 (p<0.001)	
Smith *et al.* (2010)	Canada, Cross-sectional, newly graduated nurses (n=117, females 95.7%, mean age 27.1 years old)	To test an expanded model of Kanter's theory by examining the influence of structural empowerment, psychological empowerment and workplace incivility on the organizational commitment of newly-graduated nurses	• 23.1% of the variance in affective commitment was explained by structural empowerment, psychological empowerment and workplace incivility • Access to opportunity was the most empowering factor, with access to support and formal power perceived as least empowering	Pearson's correlation coefficients, hierarchical linear regression	Organisational Commitment (Meyer *et al.*, 1993) [α = 0.82, mean (SD) = 4.06 (1.22)] Structural Empowerment (Laschinger *et al.*, 2001) [α = 0.87, mean (SD) = 19.57 (3.11)] Psychological Empowerment (Spreitzer, 1995) [α = 0.84, mean (SD) = 3.71 (0.48)] Workplace Incivility (Cortina *et al.*, 2001) [α = 0.87, mean (SD) = 1.50 (0.56)]	0.402 (p<0.001) --- 0.346 (p<0.001) -0.301 (p=0.001)	--- --- 0.377 (p<0.001) -0.227 (p=0.014)	No moderators examined
Chang *et al.* (2010)	Taiwan, Cross-sectional, School nurses (n=330, females 100%, mean age not reported)	To test an exploratory model of empowerment in school health nurses by examining the mediating role of psychological empowerment in the relationship between external factors and job satisfaction and organizational commitment.	• The exploratory model (goodness-of-fit index = 0.98) indicated that psychological empowerment did not mediate the relationship between structural empowerment and job satisfaction because of the strong direct effects of structural empowerment on job satisfaction • The influence of empowerment on organizational commitment was mediated through job satisfaction	Pearson's correlation coefficients, structural equation modelling	Organisational Commitment (Wu, 2005; Chang and Chi, 2006) [α = 0.92, mean (SD) = 3.85 (0.56)] Structural Empowerment (Laschinger *et al.*, 2001) [α = 0.89, mean (SD) = 3.28 (0.62)] Psychological Empowerment (Spreitzer, 1995) [α = 0.83, mean (SD) = 3.64 (0.53)] Job Satisfaction (Hackman and Oldham, 1976; Wu, 2005) [α = 0.77, mean (SD) = 3.44 (0.50)]	0.55 (p<0.001) --- 0.63 (p<0.001) 0.74 (p<0.001)	--- --- 0.51 (p<0.001) 0.72 (p<0.001)	Years of working experience and job satisfaction moderates the effect of structural empowerment on commitment
Ahmad and Oranye (2010)	England and Malaysia, Cross-sectional, hospital registered nurses (n=556, females 96.4%, mean age 34.1 years old)	To examine the relationships between nurses' empowerment, job satisfaction and organizational commitment in culturally and developmentally different societies	• Although the Malaysian nurses felt more empowered and committed to their organization, the English nurses were more satisfied with their job.	Spearman's correlations coefficients, regression analysis	Organisational Commitment (Meyer and Allen, 1991) [α = 0.835, mean (SD) = 77.33 (15.30)] Structural Empowerment (Laschinger *et al.*, 2001) [α = 0.867, mean (SD) = 65.86 (8.56)] Psychological Empowerment (Spreitzer, 1995) [α = 0.900, mean (SD) = 62.3 (9.96)] Job Satisfaction (Stamps, 1998) [α = 0.82, mean (SD) = 176.07 (22.60)]	0.211 (p<0.001) --- --- 0.423 (p<0.001)	--- --- 0.398 (p<0.001) 0.356 (p<0.001)	No moderators were examined
Young-Ritchie *et al.* (2009)	Canada, Cross-sectional, Staff nurses in the emergency department (n=206, females 95.1%, mean age 39.6 years old)	To test a model exploring the relationships among emotionally intelligent leadership behaviour, workplace empowerment and commitment	• Perceived emotionally intelligent leadership behaviour had a strong direct effect on structural empowerment, which in turn had a strong direct effect on organizational commitment	Pearson's correlation coefficients, structural equation modelling	Organisational Commitment (Meyer *et al.*, 1993) [α = 0.79, mean (SD) = 4.27 (1.30)] Structural Empowerment (Laschinger *et al.*, 2001) [α = 0.87, mean (SD) = 18.36 (3.22)] Emotional Intelligence (Wolff, 2005) [α = 0.99, mean (SD) = 3.43 (0.70)]	0.61 (p<0.001) --- 0.54 (p<0.001)	--- --- 0.40 (p<0.001)	No moderators examined
Spence Laschinger *et al.* (2009)	Canada, Cross-sectional, Staff nurses (n=612, females 95%, mean age 41.3 years old)	To examine the influence of empowering work conditions and workplace incivility on nurses' experiences of burnout and important nurse retention factors identified in the literature	• Empowerment, workplace incivility, and burnout explained significant variance in all three retention factors: job satisfaction, organizational commitment and turnover intentions • Empowerment, supervisor incivility, and cynicism most strongly predicted job dissatisfaction and low commitment	Pearson's correlation coefficients, hierarchical linear regression	Organisational Commitment (Meyer *et al.*, 1993) [α = 0.65, mean (SD) = 3.14 (0.89)] Structural Empowerment (Laschinger *et al.*, 2001) [α = 0.79, mean (SD) = 12.03 (2.18)] Incivility-supervisor (Cortina *et al.*, 2001) [α = 0.90, mean (SD) = 0.66 (0.89)] Incivility-coworkers (Cortina *et al.*, 2001) [α = 0.86, mean (SD) = 0.81 (0.82)] Emotional exhaustion (Maslach *et al.*, 1996) [α = 0.91, mean (SD) = 2.99 (1.42)] Cynicism (Maslach *et al.*, 1996) [α = 0.82, mean (SD) = 1.77 (1.26)] Job satisfaction (Hackman and Oldham, 1975; Tsui *et al.*, 1992) [α = 0.71, mean (SD) = 5.19 (0.96)] Intent to leave (Kelloway *et al.*, 1999) [α = 0.83, mean (SD) = 2.36 (0.98)]	0.435 (p<0.001) --- -0.256 (p<0.001) -0.181 (p<0.001) -0.235 (p<0.001) -0.376 (p<0.001) 0.476 (p<0.001) -0.268 (p<0.001)	--- --- -0.312 (p<0.001) -0.266 (p<0.001) -0.257 (p<0.001) -0.407 (p<0.001) 0.501 (p<0.001) -0.398 (p<0.001)	No moderators were examined
Laschinger *et al.* (2009)	Canada, Cross-sectional, Staff nurses (n=3156, females 95.3%, mean age 42 years old)	To test a multilevel model linking unit-level leader-member exchange quality and structural empowerment to nurses' psychological empowerment and organizational commitment	• Significant individual and contextual effects on nurses' organizational commitment • Both unit-level leader-member exchange quality and structural empowerment had significant direct effects on individual-level	Pearson's correlation coefficients, structural equation modelling	Organisational Commitment (Meyer *et al.*, 1993) [α = 0.82, mean (SD) = 3.52 (1.14)] Structural Empowerment (Laschinger *et al.*, 2001) [α = 0.87, mean (SD) = 19.44 (2.07)] Leader-member exchange (Liden and R., 1998) [α = 0.94, mean (SD) = 4.41 (0.68)] Psychological empowerment (Spreitzer, 1995) [α = 0.90, mean (SD) = 3.89 (0.49)]	0.35 (p<0.001) --- 0.36 (p<0.001) 0.39 (p<0.001)	--- --- 0.37 (p<0.001) 0.41 (p<0.001)	At unit level, leader-member exchange quality had a significant direct effect on structural empowerment, which in turn had a significant direct effect on individual-level nurses'

Study	Country, Design, Subjects	Aim	Main Results	Type of analysis	Construct (reference for scale used, Cronbach's alpha, mean and standard deviation)	Correlations with Structural empowerment (value, p-value)	Correlations with Organisational Commitment (value, p-value)	Moderators between structural empowerment and organisation commitment
			psychological empowerment and organizational commitment		Core self-evaluation (Judge *et al.*, 2003) [α = 0.92, mean (SD) = 5.21 (0.78)]	0.12 (p<0.001)	0.21 (p<0.001)	psychological empowerment and job commitment
DeCicco *et al.* (2006)	Canada, Cross-sectional, Registered nurses and registered practical nurses in nursing homes (n=154, females 96%, mean age 44 years old)	To test Kanter's theory of structural empowerment by examining relationships between nurses' perceptions of structural and psychological empowerment, respect, and organizational commitment	• Both groups reported moderate levels of empowerment, respect, and commitment, with registered nurses being slightly higher than practical nurses • Access to opportunity was the most empowering factor for nurses and access to resources the least empowering • Structural empowerment, psychological empowerment, and respect explained 48% of the variance in affective commitment	Pearson's correlation coefficients, multiple regression analysis	Organisational Commitment (Meyer *et al.*, 1993) [α = 0.82, mean (SD) = 4.36 (1.26)] Structural Empowerment (Laschinger *et al.*, 2001) [α = 0.86, mean (SD) = 18.56 (4.15)] Psychological Empowerment (Spreitzer, 1995) [α = 0.83, mean (SD) = 15.83 (2.07)] Respect (Siegrist, 1996) [α = 0.86, mean (SD) = 4.76 (1.46)]	0.61 (p<0.001) --- 0.52 (p<0.001) 0.59 (p<0.001)	--- --- 0.46 (p<0.001) ---	None reported
Cho *et al.* (2006)	Canada, Cross-sectional, newly graduated nurses (n=226, females 93.4%, mean age 27 years old)	To examine factors that will promote the engagement and empowerment of the newer workforce	• Structural empowerment had a direct positive effect on the areas of work life, which in turn had a direct negative effect on emotional exhaustion. • Emotional exhaustion had a direct negative effect on commitment.	Pearson's correlation coefficients, structural equation modelling	Organisational Commitment (Meyer *et al.*, 1993) [α = 0.79, mean (SD) = 3.95 (1.17)] Structural Empowerment (Laschinger *et al.*, 2001) [α = 0.87, mean (SD) = 19.31 (3.10)] Six areas of work life (Leiter and Maslach, 1999) [α = 0.89, mean (SD) = 18.99 (2.89)] Emotional Exhaustion (Maslach *et al.*, 1996) [α = 0.91, mean (SD) = 3.42 (1.32)]	0.51 (p<0.001) --- 0.69 (p<0.001) -0.27 (p<0.001)	--- --- 0.58 (p<0.001) -0.13 (p=0.051)	• Structural empowerment affected directly commitment but also through six areas of work life and emotional exhaustion • Generally the more empowered someone was, the more engaged with work, less exhausted and hence more committed
Laschinger and Finegan (2005)	Canada, Cross-sectional, staff nurses in medical-surgical areas or intensive care (n=273, female percentage not reported, mean age 33 years old)	To evaluate nurses' empowerment on perceptions of organisational justice, respect and trust in management	• Higher levels of structural empowerment were found to positively influence perceptions of interactional justice, respect, and trust in management, which, ultimately, increased perceptions of job satisfaction and organizational commitment	Structural equation modelling	Organizational commitment (Williams and Cooper, 1998) [α = 0.69, mean (SD) = 3.84 (0.72)] Structural Empowerment (Laschinger *et al.*, 2001) [α = 0.90, mean (SD) = 17.80 (3.28)] Job Satisfaction (Williams and Cooper, 1998) [α = 0.88, mean (SD) = 3.99 (0.83)] Trust (Mishra, 1996) [α = 0.97, mean (SD) = 3.24 (1.17)] Respect (Siegrist, 1996) [α = 0.77, mean (SD) = 4.39 (1.18)] Interactional Justice (Moorman, 1991) [α = 0.99, mean (SD) = 4.16 (1.45)]	0.18 (p=0.003) --- 0.52 (p<0.001) 0.25 (p<0.001) 0.24 (p<0.001) 0.42 (p<0.001)	--- --- 0.54 (p<0.001)	• Structural empowerment has a larger effect through job satisfaction than on commitment itself. • Empowerment also affects respect, trust and justice before affecting commitment
Laschinger *et al.* (2002)	Canada, Cross-sectional, nurses who work in urban tertiary care hospitals (n=412, females 53%, mean age 40 years old)	To test Kanter's work empowerment theory in a random sample of staff nurses	• Fostering environments that enhance perceptions of empowerment will have positive effects on organizational members and increase organizational effectiveness	Structural equation modelling	Organisational Commitment (Meyer *et al.*, 1993) [α = 0.75, mean (SD) = 4.08 (1.21)] Structural Empowerment (Laschinger *et al.*, 2001) [α = 0.93, mean (SD) = 11.04 (2.23)] Job Satisfaction (Hackman and Oldham, 1975) [α = 0.82, mean (SD) = 2.78 (0.90)] Trust (Cook and Wall, 1980) [α = 0.84, mean (SD) = 3.20 (0.83)]	0.40 (p<0.001) --- 0.56 (p<0.001) 0.54 (p<0.001)	--- --- 0.60 (p<0.001) 0.46 (p<0.001)	Structural empowerment affects commitment through trust and job satisfaction
McDermott *et al.* (1996)	Canada, Cross-sectional, staff nurses (n=112, females 92%, mean age 34.4 years old)	To examine the relationship between job-related empowerment perceptions of staff nurses and their commitment to the organization based on Kanter's Structural Theory of Organizational Behavior.	• Structural empowerment is strongly correlated with organisation commitment and power	Pearson's correlation coefficients	Organisational Commitment (Mowday *et al.*, 1979) [mean (SD) = 4.89 (0.92)] Structural Empowerment (Chandler, 1986) [mean (SD) = 11.65 (2.20)] Power (Laschinger, 1996) [mean (SD) = 2.80 (0.74)]	0.533 (p<0.001) --- 0.615 (p<0.001)	--- ---	No moderators examined
Wilson and Laschinger (1994)	Canada, Cross-sectional, staff nurses (n=92, females 96%, mean age 34 years old)	To examine Kanter's structural theory of organizational behaviour in a nursing population by examining the	• A strong positive relationship was found between nurses' perceptions	Pearson's correlation coefficients	Organisational Commitment (Mowday *et al.*, 1979) [mean (SD) = 4.41 (1.14)] Structural Empowerment (Chandler, 1986) [α = 0.89, mean (SD) = 12.25 (2.76)]	0.773 (p<0.001) ---	--- ---	None reported

Study	Country, Design, Subjects	Aim	Main Results	Type of analysis	Construct (reference for scale used, Cronbach's alpha, mean and standard deviation)	Correlations with Structural empowerment (value, p-value)	Correlations with Organisational Commitment (value, p-value)	Moderators between structural empowerment and organisation commitment
		relationship between staff nurses' perceived job empowerment and their organisational commitment	of power and opportunity and their commitment to the organization • Overall empowerment was correlated positively with nurses' perceptions of their immediate managers' power		Power (Laschinger, 1991) [mean (SD) = 2.80 (0.68)]	0.661 (p<0.001)	---	

Table 2. Results of meta-analyses of correlations.

Constructs	N	k	Effect Size		Heterogeneity		Publication Bias	
			r (95% CI)	p	I^2	p	Egger's / Begg's p-value	Failsafe number
OC⇔SE	10912	23	0.434 (0.372, 0.492)	<0.01	92%	<0.01	0.168/0.398	14383
OC⇔JS	4893	10	0.528 (0.419, 0.622	<0.01	96%	<0.01	0.123/0.719	5268
OC⇔PE	4981	9	0.467 (0.369, 0.554)	<0.01	91%	<0.01	---/---	2778
SE⇔JS	4893	10	0.570 (0.482, 0.464)	<0.01	94%	<0.01	0.163/0.209	6423
SE⇔PE	4275	6	0.440 (0.297, 0.563)	<0.01	94%	<0.01	---/---	1232
JS⇔PE	886	3	0.534 (0.294, 0.710)	<0.01	95%	<0.01	---/---	319

N: number of participants, k: number of samples/studies; OC: organisational commitment; SE: structural empowerment; JS: job satisfaction; PE: psychological empowerment

Table 3. Structural equation models fit indices and squared multiple correlations.

	Model 1 (hypothesized)	Model 2 (improved model)
Fit Indices		
χ^2/df	156.6 ($\chi^2_{(1)}$=156.569, p<0.001)	12.6 ($\chi^2_{(1)}$=12.577, p=0.001)
RMSEA	0.231 (0.202, 0.263)	0.063 (0.035-0.096)
CFI	0.955	0.997
NFI	0.955	0.996
TLI	0.729	0.980
GFI	0.974	0.998
Squared Multiple Correlations		
Performance	--	100%
PE	19.4%	---
JS	42.4%	---
OC	30.5%	---

Figure 1. Meta-analyses of correlations. A. Forest plot for OC⇔SE. B. Forest plot for OC⇔JS. C. Forest plot for OC⇔PE. D. Forest plot for SE⇔JS. E. Forest plot for SE⇔PE. F. Forest plot for PE⇔JS. G. Funnel Plot for OC⇔SE. H. Funnel plot for OC⇔JS. I. Funnel plot for SE⇔JS. OC: organisational commitment; SE: structural empowerment; JS: job satisfaction; PE: psychological empowerment; IV: Inverse Variance.

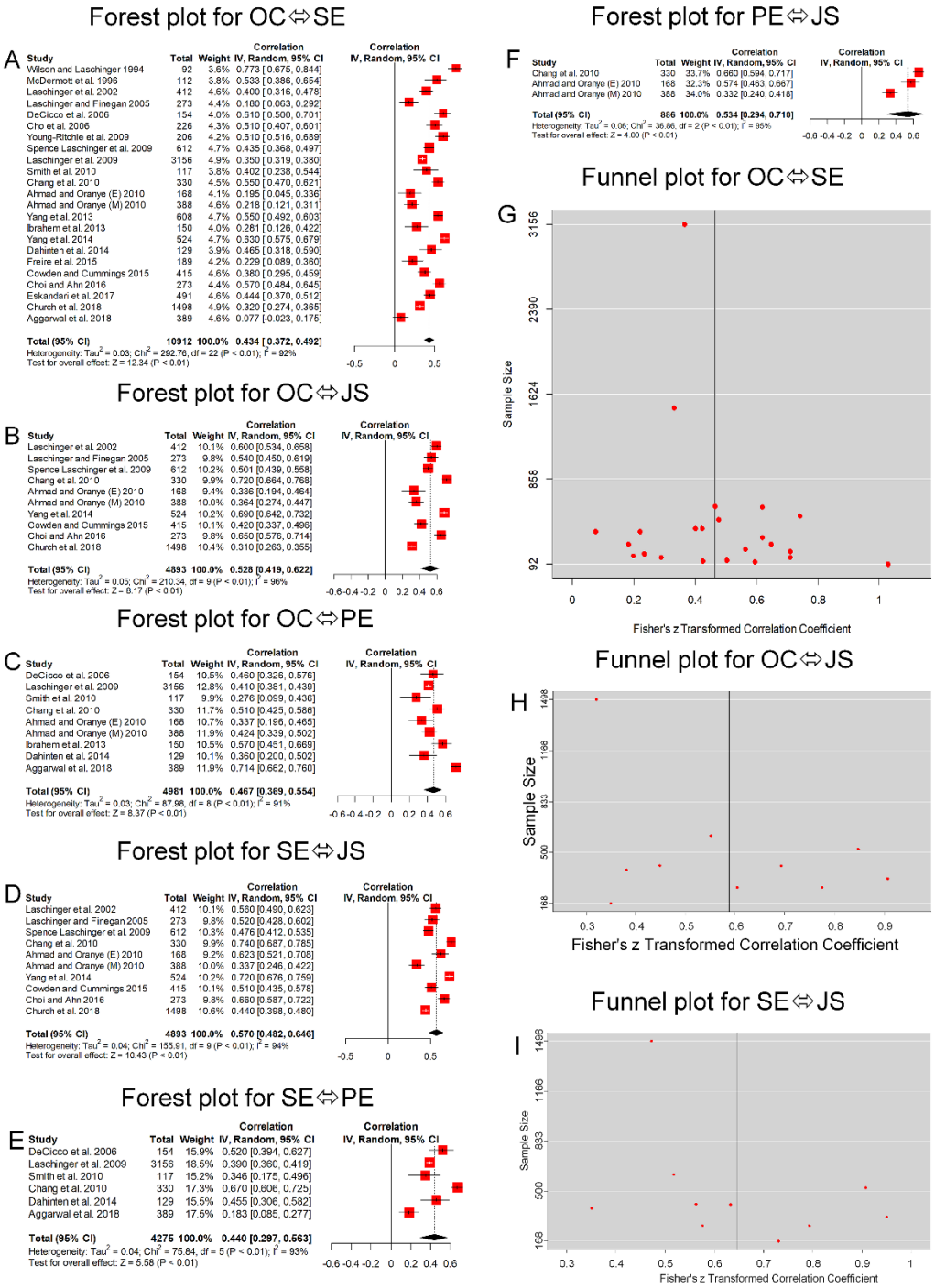
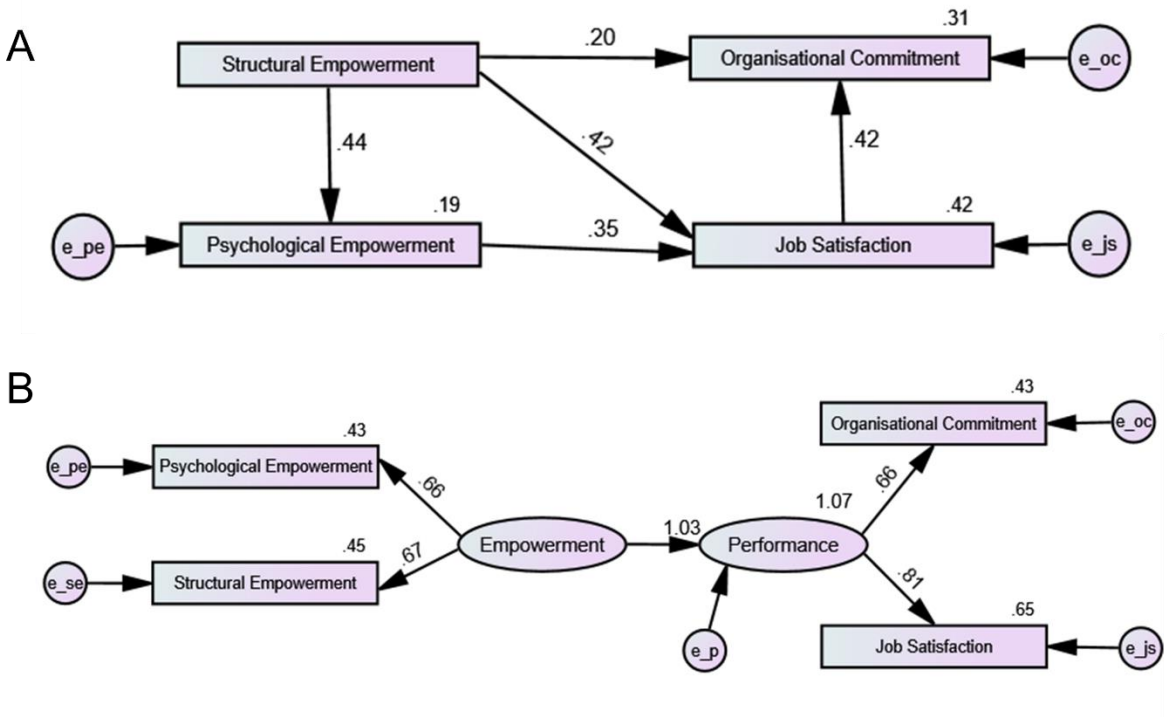


Figure 2. A. Hypothesized Model 1. Fit was not as good as Model 2. B. Model 2. Preferred model due to better fit. Values on the arrows indicate standardized regression weights.



REFERENCES

Abel, S.E. & Hand, M.W. (2018) Exploring, defining, and illustrating a concept: Structural and psychological empowerment in the workplace. *Nurs Forum,* **53**(4), 579-584.

Adams, A. & Bond, S. (2000) Hospital nurses' job satisfaction, individual and organizational characteristics. *J Adv Nurs,* **32**(3), 536-43.

Aggarwal, A., Dhaliwal, R.S. & Nobi, K. (2018) Impact of Structural Empowerment on Organizational Commitment: The Mediating Role of Women's Psychological Empowerment. *Vision,* **22**(3), 284-294.

Ahmad, N. & Oranye, N.O. (2010) Empowerment, job satisfaction and organizational commitment: a comparative analysis of nurses working in Malaysia and England. *J Nurs Manag,* **18**(5), 582-91.

Allen, N.J. & Meyer, J.P. (1990) The measurement and antecedents of affective, continuance and normative commitment to the organization. *Journal of Occupational Psychology,* **63**(1), 1-18.

Avolio, B.J., Zhu, W., Koh, W. & Bhatia, P. (2004) Transformational leadership and organizational commitment: Mediating role of psychological empowerment and moderating role of structural distance. *Journal of Organizational Behavior,* **25**(8), 951-968.

Bagozzi, R.P. & Yi, Y. (1988) On the evaluation of structural equation models. *Journal of the Academy of Marketing Science,* **16**(1), 74-94.

Balogun, J., Hope Hailey, V. & Gustafsson, S. (2016) *Exploring strategic change,* Pearson Education, Harlow, United Kingdom.

Begg, C.B. & Mazumdar, M. (1994) Operating Characteristics of a Rank Correlation Test for Publication Bias. *Biometrics,* **50**(4), 1088-1101.

Chandler, G.E. (1986) The Relationship of Nursing Work Environment to Empowerment and Powerlessness (PhD thesis). In *College of Nursing,* Vol. PhD University of Utah.

Chang, H.T. & Chi, N.W. (2006) The effects of three-components model of organizational and occupational commitment on nurses' intentions to leave organization and occupation: the mediator of organizational and occupational leaving intentions. *Journal of Human Resource Management,* **6**(2), 111-133.

Chang, L.C., Shih, C.H. & Lin, S.M. (2010) The mediating role of psychological empowerment on job satisfaction and organizational commitment for school health nurses: A cross-sectional questionnaire survey. *International Journal of Nursing Studies,* **47**(4), 427-433.

Cheung, M.W. & Cheung, S.F. (2016) Random-effects models for meta-analytic structural equation modeling: review, issues, and illustrations. *Res Synth Methods,* **7**(2), 140-55.

Cho, J., Laschinger, H.K. & Wong, C. (2006) Workplace empowerment, work engagement and organizational commitment of new graduate nurses. *Nurs Leadersh (Tor Ont),* **19**(3), 43-60.

Choi, H.G. & Ahn, S.H. (2016) Influence of nurse managers' authentic leadership on nurses' organizational commitment and job satisfaction: Focused on the mediating effects of empowerment. *Journal of Korean Academy of Nursing,* **46**(1), 100-108.

Church, C.D., He, Z. & Yarbrough, S. (2018) Factors Influencing Organizational Commitment and Turnover in Nurse Residents. *J Contin Educ Nurs,* **49**(10), 482-488.

Cicolini, G., Comparcini, D. & Simonetti, V. (2014) Workplace empowerment and nurses' job satisfaction: a systematic literature review. *J Nurs Manag,* **22**(7), 855-71.

Cleary, M., Horsfall, J., Jackson, D., Muthulakshmi, P. & Hunt, G.E. (2013) Recent graduate nurse views of nursing, work and leadership. *J Clin Nurs,* **22**(19-20), 2904-11.

Cohen, J. (1992) A power primer. *Psychol Bull,* **112**(1), 155-9.

Cowden, T.L. & Cummings, G.G. (2012) Nursing theory and concept development: a theoretical model of clinical nurses' intentions to stay in their current positions. *J Adv Nurs,* **68**(7), 1646-57.

Cowden, T.L. & Cummings, G.G. (2015) Testing a theoretical model of clinical nurses' intent to stay. *Health Care Manage Rev,* **40**(2), 169-81.

Dahinten, V.S., Macphee, M., Hejazi, S., Laschinger, H., Kazanjian, M., McCutcheon, A., Skelton-Green, J. & O'Brien-Pallas, L. (2014) Testing the effects of an empowerment-based leadership development programme: part 2 - staff outcomes. *J Nurs Manag,* **22**(1), 16-28.

DeCicco, J., Laschinger, H. & Kerr, M. (2006) Perceptions of empowerment and respect: effect on nurses' organizational commitment in nursing homes. *J Gerontol Nurs,* **32**(5), 49-56.

Duval, S. & Tweedie, R. (2000) Trim and fill: A simple funnel-plot-based method of testing and adjusting for publication bias in meta-analysis. *Biometrics,* **56**(2), 455-63.

Egger, M., Smith, G.D., Schneider, M. & Minder, C. (1997) Bias in meta-analysis detected by a simple, graphical test. *British Medical Journal,* **315**(7109), 629-634.

Eskandari, F., Siahkali, S.R., Shoghli, A., Pazargadi, M. & Tafreshi, M.Z. (2017) Investigation of the relationship between structural empowerment and organizational commitment of nurses in Zanjan hospitals. *Afr Health Sci,* **17**(1), 285-292.

Flinkman, M., Leino-Kilpi, H., Numminen, O., Jeon, Y., Kuokkanen, L. & Meretoja, R. (2017) Nurse Competence Scale: a systematic and psychometric review. *Journal of Advanced Nursing,* **73**(5), 1035-1050.

Fragkos, K.C., Tsagris, M. & Frangos, C.C. (2014) Publication Bias in Meta-Analysis: Confidence Intervals for Rosenthal's Fail-Safe Number. *Int Sch Res Notices,* **2014**, 825383.

Freire, C.M.F.C. & Azevedo, R.M.M. (2015) Empowering and trustful leadership: Impact on nurses' commitment. *Personnel Review,* **44**(5), 702-719.

Goedhart, N.S., van Oostveen, C.J. & Vermeulen, H. (2017) The effect of structural empowerment of nurses on quality outcomes in hospitals: a scoping review. *J Nurs Manag,* **25**(3), 194-206.

Hakstian, A.R. & Whalen, T.E. (1976) A k-sample significance test for independent alpha coefficients. *Psychometrika,* **41**(2), 219-231.

Hedges, L.V. (2016) Applying meta-analysis to structural equation modeling. *Res Synth Methods,* **7**(2), 209-14.

Hedges, L.V. & Olkin, I. (1980) Vote-counting methods in research synthesis. *Psychological Bulletin,* **88**(2), 359-369.

Higgins, J.P.T., Thompson, S.G., Deeks, J.J. & Altman, D.G. (2003) Measuring inconsistency in meta-analyses. *British Medical Journal,* **327**(7414), 557-60.

Hu, L.t. & Bentler, P.M. (1999) Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal,* **6**(1), 1-55.

Hunter, J.P., Saratzis, A., Sutton, A.J., Boucher, R.H., Sayers, R.D. & Bown, M.J. (2014) In meta-analyses of proportion studies, funnel plots were found to be an inaccurate method of assessing publication bias. *J Clin Epidemiol,* **67**(8), 897-903.

Ibrahem, S.Z., Elhoseeny, T. & Mahmoud, R.A. (2013) Workplace empowerment and organizational commitment among nurses working at the Main University Hospital, Alexandria, Egypt. *J Egypt Public Health Assoc,* **88**(2), 90-6.

Kanning, U.P. & Hill, A. (2013) Validation of the Organizational Commitment Questionnaire (OCQ) in six languages. *Journal of Business and Media Psychology,* **4**(2), 11-20.

Kanter, R.M. (1993) *Men and women of the corporation,* BasicBooks, New York.

Kaufman, G. & McCaughan, D. (2013) The effect of organisational culture on patient safety. *Nurs Stand,* **27**(43), 50-6.

Kuokkanen, L. & Katajisto, J. (2003) Promoting or impeding empowerment? Nurses' assessments of their work environment. *Journal of Nursing Administration,* **33**(4), 209-215.

Kuokkanen, L., Leino-Kilpi, H. & Katajisto, J. (2003) Nurse Empowerment, Job-Related Satisfaction, and Organizational Commitment. *Journal of Nursing Care Quality,* **18**(3), 184-192.

Laschinger, H. (1991) Organizational Description Opinionnaire. University of Western Ontario, London, Ontario.

Laschinger, H.K. (1996) A theoretical approach to studying work empowerment in nursing: a review of studies testing Kanter's theory of structural power in organizations. *Nurs Adm Q,* **20**(2), 25-41.

Laschinger, H.K. & Finegan, J. (2005) Using empowerment to build trust and respect in the workplace: a strategy for addressing the nursing shortage. *Nurs Econ,* **23**(1), 6-13, 3.

Laschinger, H.K., Finegan, J., Shamian, J. & Wilk, P. (2001) Impact of structural and psychological empowerment on job strain in nursing work settings: expanding Kanter's model. *J Nurs Adm,* **31**(5), 260-72.

Laschinger, H.K., Finegan, J. & Wilk, P. (2009) Context matters: the impact of unit leadership and empowerment on nurses' organizational commitment. *J Nurs Adm,* **39**(5), 228-35.

Laschinger, H.K. & Shamian, J. (1994) Staff nurses' and nurse managers' perceptions of job-related empowerment and managerial self-efficacy. *J Nurs Adm,* **24**(10), 38-47.

Laschinger, H.K., Wong, C., McMahon, L. & Kaufmann, C. (1999) Leader behavior impact on staff nurse empowerment, job tension, and work effectiveness. *J Nurs Adm,* **29**(5), 28-39.

Laschinger, H.K.S., Finegan, J. & Shamian, J. (2002) The impact of workplace empowerment, organizational trust on staff nurses' work satisfaction and organizational commitment. *Advances in Health Care Management,* **3**, 59-85.

Li, H., Shi, Y., Li, Y., Xing, Z., Wang, S., Ying, J., Zhang, M. & Sun, J. (2018) Relationship between nurse psychological empowerment and job satisfaction: A systematic review and meta-analysis. *J Adv Nurs,* **74**(6), 1264-1277.

Lin, W.Q., Zhang, Z.C. & Fang, L.L. (2001) The study of organizational commitment in Chinese employees. *Social Sciences In China,* **21**(2), 90-102.

Lu, H., While, A.E. & Barriball, K.L. (2005) Job satisfaction among nurses: a literature review. *Int J Nurs Stud,* **42**(2), 211-27.

Manley, K., Sanders, K., Cardiff, S. & Webster, J. (2011) Effective workplace culture: the attributes, enabling factors and consequences of a new concept. *International Practice Development Journal,* **1**(2), 1-29.

McDermott, K., Laschinger, H.K. & Shamian, J. (1996) Work empowerment and organizational commitment. *Nurs Manage,* **27**(5), 44-7; quiz 48.

McMurray, A. (2010) Empowerment and enterprise: The political economy of nursing. *Collegian,* **17**(3), 113-118.

Meyer, J.P. & Allen, N.J. (1991) A three-component conceptualization of organizational commitment. *Human Resource Management Review,* **1**(1), 61-89.

Meyer, J.P., Allen, N.J. & Smith, C.A. (1993) Commitment to organizations and occupations: Extension and test of a three-component conceptualization. *Journal of Applied Psychology,* **78**(4), 538-551.

Meyer, J.P., Kam, C., Goldenberg, I. & Bremner, N.L. (2013) Organizational Commitment in the Military: Application of a Profile Approach. *Military Psychology,* **25**(4), 381-401.

Meyer, M.C., Torres, S., Cermeño, N., MacLean, L. & Monzón, R. (2003) Immigrant women implementing participatory research in health promotion. *Western Journal of Nursing Research,* **25**(7), 815-834.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G. & Group, P. (2009) Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Ann Intern Med,* **151**(4), 264-9, W64.

Mosley, R.W. (2007) Customer experience, organisational culture and the employer brand. *Journal of Brand Management,* **15**(2), 123-134.

Motwani, J., Klein, D. & Navitskas, S. (1999) Striving toward Continuous Quality Improvement: A Case Study of Saint Mary's Hospital. *Health Care Manager,* **18**(2), 33-40.

Mowday, R.T., Steers, R.M. & Porter, L.W. (1979) The measurement of organizational commitment. *Journal of Vocational Behavior,* **14**(2), 224-247.

Munn, F. (2017) Addressing high turnover rates in senior nurse roles. *Nurs Manag (Harrow),* **24**(4), 11.

Nayak, T. & Sahoo, C.K. (2015) Quality of Work Life and Organizational Performance. *Journal of Health Management,* **17**(3), 263-273.

Nei, D., Snyder, L.A. & Litwiller, B.J. (2015) Promoting retention of nurses: A meta-analytic examination of causes of nurse turnover. *Health Care Manage Rev,* **40**(3), 237-53.

Numminen, O., Repo, H. & Leino-Kilpi, H. (2017) Moral courage in nursing: A concept analysis. *Nursing Ethics,* **24**(8), 878-891.

Ouyang, Y.Q., Zhou, W.B. & Qu, H. (2015) The impact of psychological empowerment and organisational commitment on Chinese nurses' job satisfaction. *Contemporary Nurse,* **50**(1), 80-91.

Oyeleye, O., Hanson, P., O'Connor, N. & Dunn, D. (2013) Relationship of workplace incivility, stress, and burnout on nurses' turnover intentions and psychological empowerment. *J Nurs Adm,* **43**(10), 536-42.

Paplanus, L.M., Bartley-Daniele, P. & Mitra, K.S. (2014) Knowledge translation: A nurse practitioner clinical ladder advancement program in a university-affiliated, integrated medical center. *Journal of the American Association of Nurse Practitioners,* **26**(8), 424-437.

Park, H.H., Park, K.S., Yom, Y.H. & Kim, K.H. (2006) Impact of clinical nurses' power and empowerment on job satisfaction and organizational commitment. *Taehan Kanho Hakhoe chi,* **36**(2), 244-254.

Parsons, M.L. & Cornett, P.A. (2011) Sustaining the pivotal organizational outcome: Magnet recognition. *Journal of Nursing Management,* **19**(2), 277-286.

Prescott, P.A. & Dennis, K.E. (1985) Power and powerlessness in hospital nursing departments. *J Prof Nurs,* **1**(6), 348-55.

Roberts, S.J. (2015) Lateral violence in nursing: a review of the past three decades. *Nurs Sci Q,* **28**(1), 36-41.

Rodriguez, M.C. & Maeda, Y. (2006) Meta-analysis of coefficient alpha. *Psychol Methods,* **11**(3), 306-22.

Rosser, E., Grey, R., Neal, D., Reeve, J., Smith, C. & Valentine, J. (2017) Supporting clinical leadership through action: The nurse consultant role. *Journal of Clinical Nursing,* **26**(23-24), 4768-4776.

Rotundo, M. (2002) The relative importance of task, citizenship, and counterproductive performance to global ratings of job performance: a policy-capturing approach. *J Appl Psychol,* **87**(1), 66-80.

Saber, D.A. (2014) Frontline registered nurse job satisfaction and predictors over three decades: A meta-analysis from 1980 to 2009. *Nursing Outlook,* **62**(6), 402-414.

Sheng, Z., Kong, W., Cortina, J.M. & Hou, S. (2016) Analyzing matrices of meta-analytic correlations: current practices and recommendations. *Res Synth Methods,* **7**(2), 187-208.

Smith, L.M., Andrusyszyn, M.A. & Spence Laschinger, H.K. (2010) Effects of workplace incivility and empowerment on newly-graduated nurses' organizational commitment. *J Nurs Manag,* **18**(8), 1004-15.

Spence Laschinger, H.K., Leiter, M., Day, A. & Gilin, D. (2009) Workplace empowerment, incivility, and burnout: Impact on staff nurse recruitment and retention outcomes. *Journal of Nursing Management,* **17**(3), 302-311.

Spreitzer, G.M. (1995) Psychological Empowerment in the Workplace: Dimensions, Measurement, and Validation. *Academy of Management Journal,* **38**(5), 1442-1465.

Sterne, J.A. & Egger, M. (2001) Funnel plots for detecting bias in meta-analysis: guidelines on choice of axis. *J Clin Epidemiol,* **54**(10), 1046-55.

Sterne, J.A., Sutton, A.J., Ioannidis, J.P., Terrin, N., Jones, D.R., Lau, J., Carpenter, J., Rucker, G., Harbord, R.M., Schmid, C.H., Tetzlaff, J., Deeks, J.J., Peters, J., Macaskill, P., Schwarzer, G., Duval, S., Altman, D.G., Moher, D. & Higgins, J.P. (2011) Recommendations for examining and interpreting funnel plot asymmetry in meta-analyses of randomised controlled trials. *British Medical Journal,* **343**, d4002.

Tsai, Y. (2011) Relationship between organizational culture, leadership behavior and job satisfaction. *BMC Health Serv Res,* **11**, 98.

Unruh, L.Y. & Zhang, N.J. (2014) Newly licensed registered nurse job turnover and turnover intent. *J Nurses Prof Dev,* **30**(5), 220-30; quiz E8-9.

Viswesvaran, C. & Ones, D.S. (1995) Theory Testing: Combining Psychometric Meta-Analysis and Structural Equations Modeling. *Personnel Psychology,* **48**(4), 865-885.

Wagner, J.I., Cummings, G., Smith, D.L., Olson, J., Anderson, L. & Warren, S. (2010) The relationship between structural empowerment and psychological empowerment for nurses: a systematic review. *J Nurs Manag,* **18**(4), 448-62.

Wagner, J.I., Warren, S., Cummings, G., Smith, D.L. & Olson, J.K. (2013) Resonant leadership, workplace empowerment, and "spirit at work": impact on RN job satisfaction and organizational commitment. *Can J Nurs Res,* **45**(4), 108-28.

Weick, K.E. & Westley, F. (1996) Organizational learning: Affirming an oxymoron. In *Handbook of organization studies.*Sage Publications, Inc, Thousand Oaks, CA, US, pp. 440-458.

Williams, S. & Cooper, C.L. (1998) Measuring occupational stress: development of the pressure management indicator. *J Occup Health Psychol*, **3**(4), 306-21.

Wilson, B. & Laschinger, H.K. (1994) Staff nurse perception of job empowerment and organizational commitment. A test of Kanter's theory of structural power in organizations. *J Nurs Adm*, **24**(4 Suppl), 39-47.

Wilson, S.J., Polanin, J.R. & Lipsey, M.W. (2016) Fitting meta-analytic structural equation models with complex datasets. *Res Synth Methods*, **7**(2), 121-39.

Wong, C.A. & Laschinger, H.K. (2013) Authentic leadership, performance, and job satisfaction: the mediating role of empowerment. *J Adv Nurs*, **69**(4), 947-59.

Yang, J., Liu, Y., Chen, Y. & Pan, X. (2014) The effect of structural empowerment and organizational commitment on Chinese nurses' job satisfaction. *Appl Nurs Res*, **27**(3), 186-91.

Yang, J., Liu, Y., Huang, C. & Zhu, L. (2013) Impact of empowerment on professional practice environments and organizational commitment among nurses: a structural equation approach. *Int J Nurs Pract*, **19 Suppl 1**, 44-55.

Young-Ritchie, C., Spence Laschinger, H.K. & Wong, C. (2009) The effects of emotionally intelligent leadership behaviour on emergency staff nurses' workplace empowerment and organizational commitment. *Nurs Leadersh (Tor Ont)*, **22**(1), 70-85.

SUPPLEMENTARY MATERIALS

Supplementary Tables

Supplementary Table 1. Quality Assessment for each study individually.

	Quality Assessment and Validity Tool for Correlational Studies														
Study	*Prospective study*	*Probability sampling*	*Sample size justification*	*Multi-site sampling*	*Protection of anonymity*	*Response rate ≥ 60%*	*Reliable independent variable measurement*	*Valid instrument used for independent variable*	*Valid instrument used for dependent variable*	*Internal consistency ≥ 0.70 for dependent variable scale (if*	*Use of a theoretical framework*	*Analysis of correlations for multiple outcomes*	*Management of outliers*	***Overall Score***	***Classification of quality***
Church *et al.* (2018)	0	0	0	1	0	0	1	1	1	2	1	1	0	8	Medium
Aggarwal *et al.* (2018)	0	0	0	1	0	1	1	1	1	2	1	1	0	9	Medium
Eskandari *et al.* (2017)	0	0	0	1	0	1	1	1	1	2	1	1	0	9	Medium
Choi and Ahn (2016)	0	0	1	1	0	1	1	1	1	2	1	1	0	10	High
Freire and Azevedo (2015)	0	0	0	1	1	0	1	1	1	2	1	1	0	9	Medium
Yang *et al.* (2014)	0	0	0	1	1	1	1	1	1	2	1	1	0	10	High
Cowden and Cummings (2015)	0	0	1	1	0	0	1	1	1	2	1	1	0	9	Medium
Dahinten *et al.* (2014)	1	0	1	0	0	0	1	1	1	2	1	1	0	9	Medium
Yang *et al.* (2013)	0	0	0	1	1	1	1	1	1	2	1	1	0	10	High
Ibrahem *et al.* (2013)	0	1	1	0	1	1	1	1	1	2	1	1	0	11	High
Smith *et al.* (2010)	0	0	0	1	0	0	1	1	1	2	1	1	0	8	Medium
Chang *et al.* (2010)	0	1	1	1	1	1	1	1	1	2	1	1	0	12	High
Ahmad and Oranye (2010)	0	0	0	1	0	1	1	1	1	2	1	1	0	9	Medium
Young-Ritchie *et al.* (2009)	0	0	1	1	0	1	1	1	1	2	1	1	0	10	High
Spence Laschinger *et al.* (2009)	0	0	0	1	0	0	1	1	1	2	1	1	0	8	Medium
Laschinger *et al.* (2009)	0	1	1	1	0	0	1	1	1	2	1	1	0	10	High
DeCicco *et al.* (2006)	0	0	1	1	0	1	1	1	1	2	1	1	0	10	High
Cho *et al.* (2006)	0	0	0	1	0	0	1	1	1	2	1	1	0	8	Medium
Laschinger and Finegan (2005)	0	0	0	1	0	0	1	1	1	2	1	0	0	7	Medium
Laschinger *et al.* (2002)	0	0	1	1	0	1	1	1	1	2	1	1	0	10	High
McDermott *et al.* (1996)	0	0	0	1	0	0	1	1	1	2	1	1	0	8	Medium
Wilson and Laschinger (1994)	0	0	0	0	1	0	1	1	1	2	1	1	0	8	Medium

Supplementary Table 2. Meta-regression results.

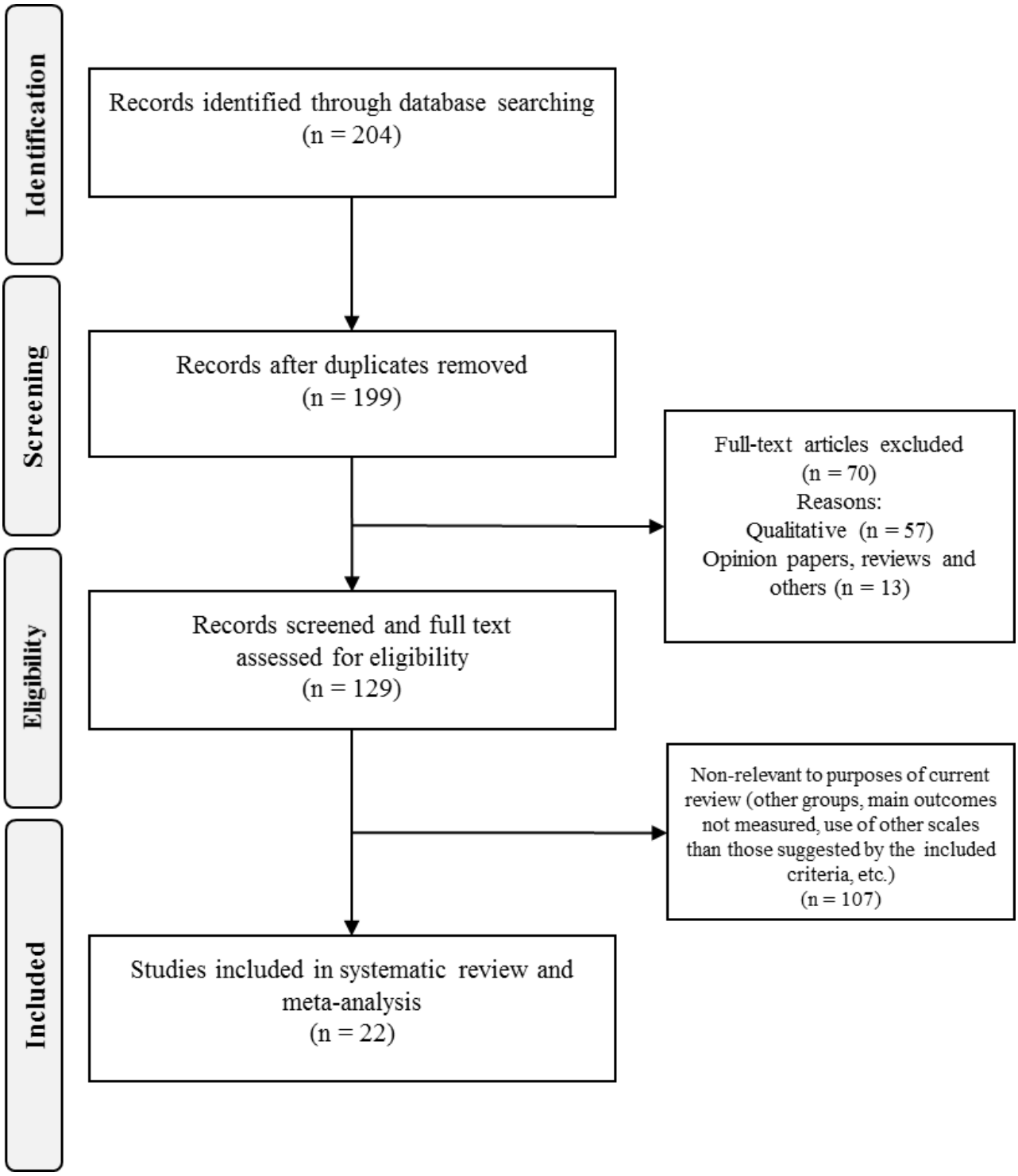
	Estimate (95% CI)	P value
Intercept	-0.03 (-1.01, 0.94)	0.946
Age	0.001 (-0.02, 0.02)	0.912
Female percentage	0.006 (-0.003, 0.014)	0.182

Supplementary Table 3. Path estimates for Model 1.

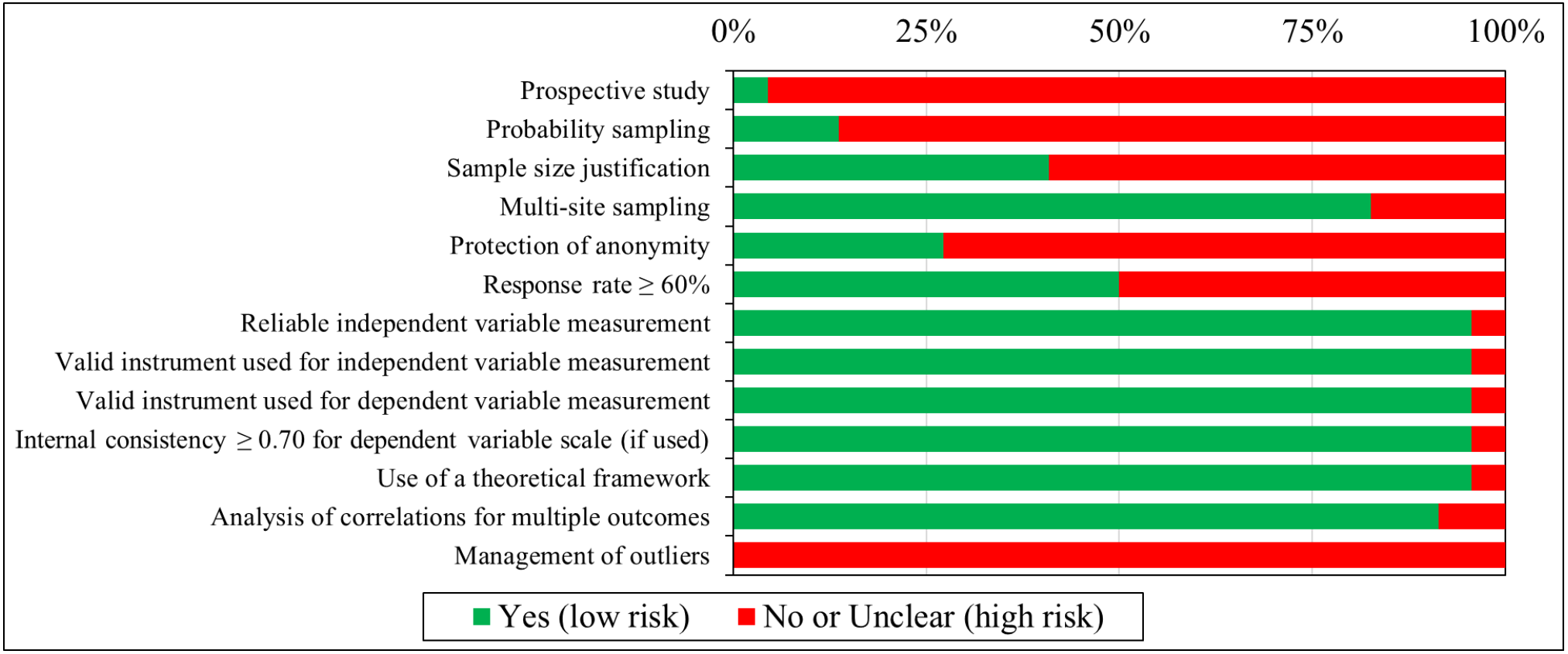
Path	Estimate β	Standard error	p-value
SE →PE	0.456	0.017	<0.001
SE →JS	0.554	0.021	<0.001
PE →JS	0.452	0.020	<0.001
SE →OC	0.144	0.014	<0.001
JS →OC	0.227	0.010	<0.001

OC: organisational commitment; SE: structural empowerment; JS: job satisfaction; PE: psychological empowerment

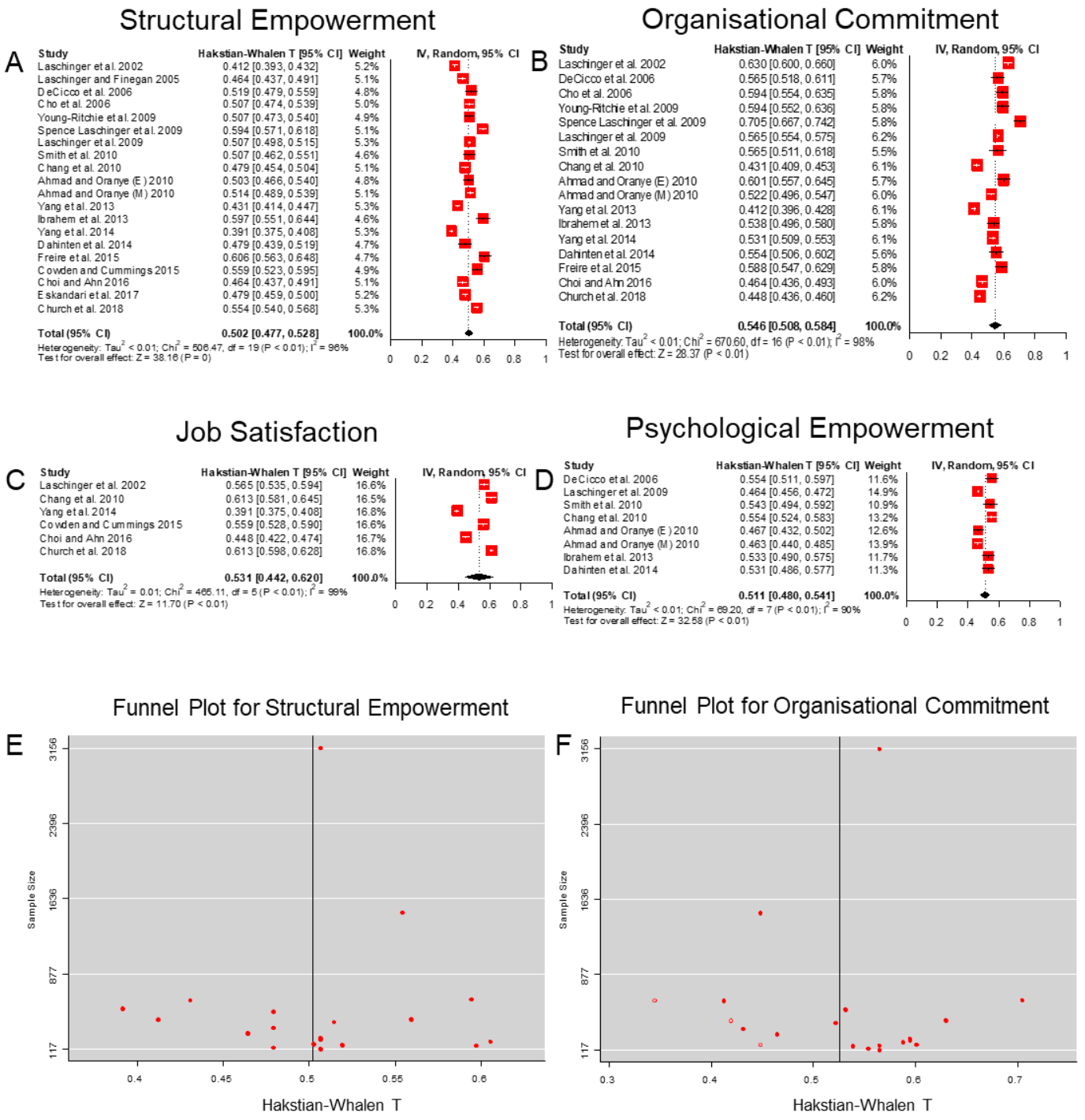
Supplementary Figures



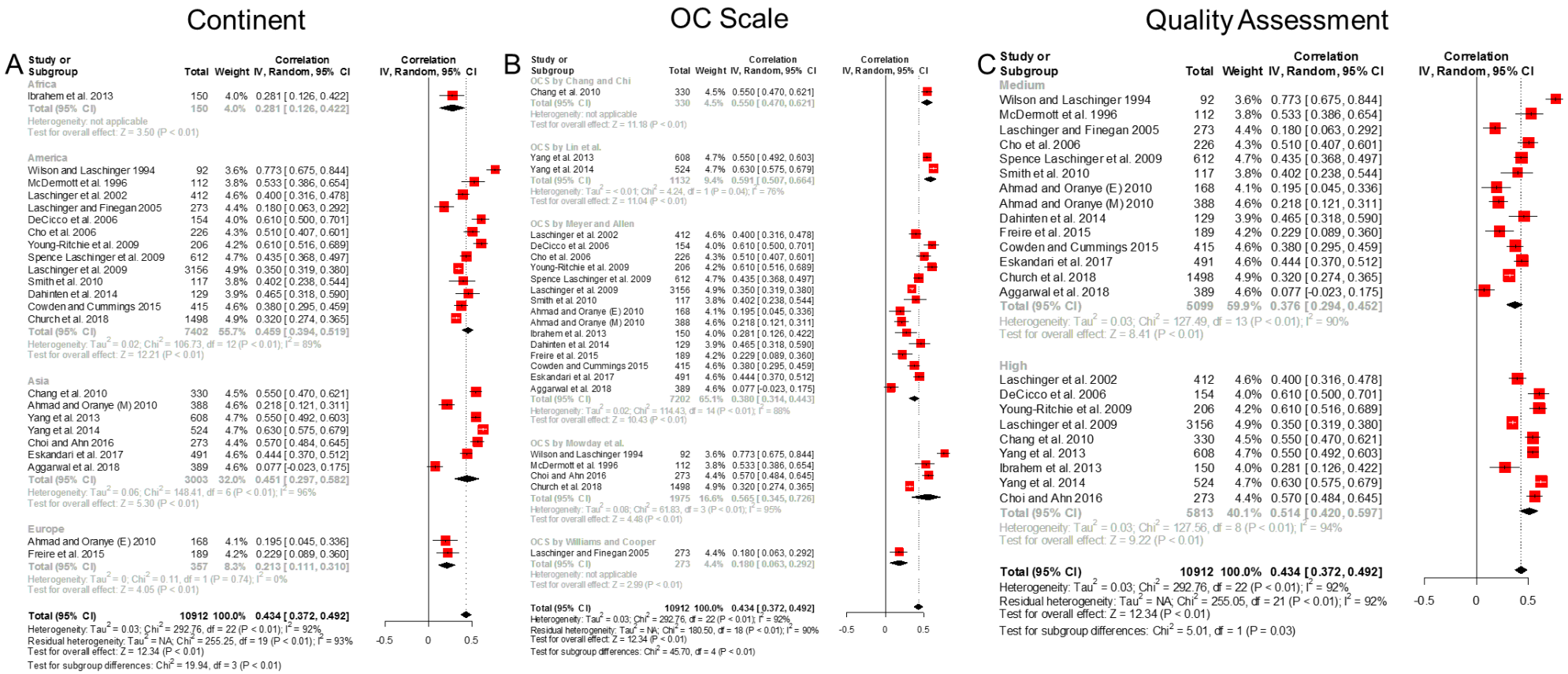
Supplementary Figure 1. Flow chart of the present review.



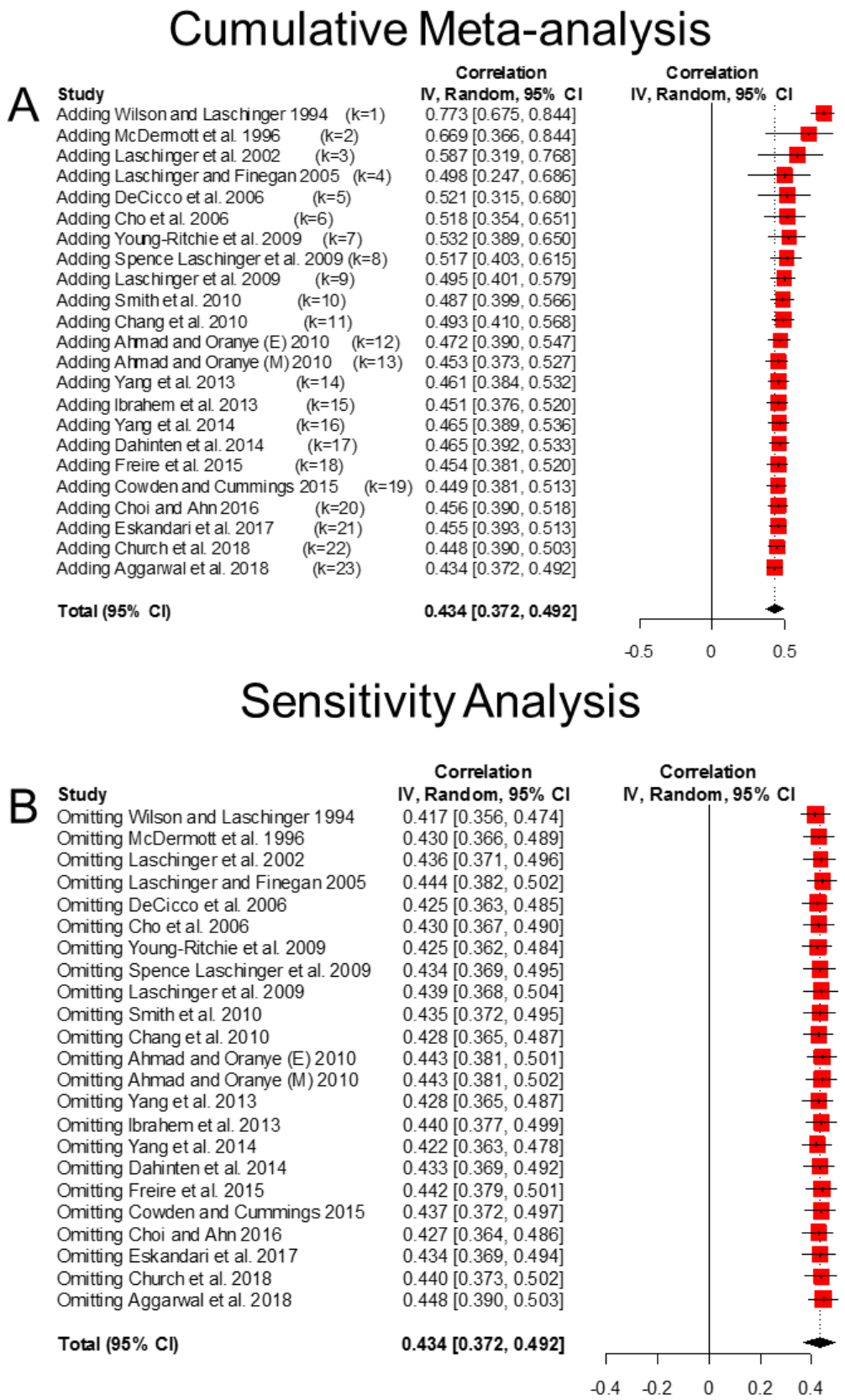
Supplementary Figure 2. Summary of Quality of studies (Quality Assessment and Validity Tool for Correlational Studies).



Supplementary Figure 3. Psychometric meta-analyses. A. Forest plot for structural empowerment. B. Forest plot for organisational commitment. C. Forest plot for job satisfaction. D. Forest plot for psychological empowerment. E. Funnel plot of publication bias for structural empowerment. F. Funnel plot of publication bias for organisational commitment. IV: Inverse Variance



Supplementary Figure 4. Subgroup meta-analyses of correlation OC⇔SE. A. Subgroup analysis by continent. B. Subgroup analysis by OC scale used. C. Subgroup analysis by quality assessment. OC: Organisational commitment; SE: Structural Empowerment; IV: Inverse Variance



Supplementary Figure 5. A. Cumulative meta-analysis of correlation OC⇔SE. B Sensitivity (Influential) analysis of correlation OC⇔SE. OC: Organisational commitment; SE: Structural Empowerment; IV: Inverse Variance