

SECURING THE WELL-BEING AND ENGAGEMENT OF CONSTRUCTION WORKERS: AN INITIAL APPRAISAL OF THE EVIDENCE

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Construction sites pose unique challenges for employers who are seeking to develop interventions to improve outcomes for workers. The contractors who constructed the infrastructure for the 2012 Olympic Games were encouraged by the client organisation to actively engage their workers and promote their well-being. This paper examines how scholarly research has approached well-being and engagement in the construction industry. A literature review identified a total of 21 papers that have examined either well-being or engagement in construction and only a single paper examined both subjects. There has been very limited research into this area. The existing papers highlight a number of gaps which could be filled through future research. The concept of well-being in construction is poorly defined and predominantly focuses on stress and work-life balance. There is a lack of clarity or certainty about whether and how some of the recommendations for improving well-being can be realistically implemented in construction, such as giving workers more flexible working arrangements. It is also unclear what specific benefits construction companies, and their clients, could expect to see from engagement or well-being strategies. Consequently, it is currently difficult to make a convincing business case or plan for the introduction of well-being or engagement strategies in construction. Nonetheless, there is evidence that engagement and well-being strategies can improve outcomes for individual construction workers and professionals, such as maintaining or improving health or promoting safety or skills development. Many of the practices that engage individuals also promote well-being: They do not need to be approached as completely separate issues. The extant research suggests that construction companies could usefully review; how they allocate and use resources on projects; the leadership and coaching skills of site managers; how workers can influence the planning of their work, and; their human resources procedures.

Keywords: engagement, safeguarding well-being, well-being.

INTRODUCTION

Engagement is occasionally cited as a technique or tool for improving the working lives of construction workers. For example, during the construction of the infrastructure of the 2012 Olympics, the Olympic Delivery Authority (ODA) “*was committed to encouraging positive engagement with the workforce on all aspects of health, safety and environment*” (Healey and Sugden 2012: 19).

Defining ‘engagement’ is surprisingly difficult: In their report to the UK Government, MacLeod and Clarke (2009) found over 50 definitions in use. Truss *et al.* (2013) describe employee engagement as a ‘contested construct’. Nonetheless,

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Shuck and Wollard (2010) synthesised what they perceive to be a working definition from the existing definitions and theoretical models:

An individual employee's cognitive, emotional, and behavioral state directed toward desired organizational outcomes.

Consequently, MacLeod and Clarke (2009) proposed that engagement improves organisational outcomes by reducing turnover and absenteeism and increasing productivity, innovation, performance and customer service leading to competitive advantages, higher profits, revenue generation and growth.

However, engagement may have beneficial outcomes for individual workers: Engagement is perceived to be one aspect of well-being (Shaufeli 2014). Engagement therefore offers the prospect of improving individual well-being and organisational outcomes (Truss *et al.* 2014).

Well-being was also introduced into the management of the Olympics 'big build' as the ODA required workers to have "*free access to an occupational health service focusing on ill-health prevention and worker well-being.*" (Healey and Sugden 2012: 12). The decision by the ODA to promote both engagement and well-being, and the possible association between these concepts, highlighted by Shaufeli (2014) and Truss *et al.* (2014), suggests that it is worthwhile examining these concepts together.

Well-being is also an unclear construct, although Huppert *et al.* (2009) suggests that it is much broader than simply being engaged or healthy: It includes how someone feels, whether they perceive that have autonomy, are competent and resilient in the face of setbacks and extends to the quality of their relationships and their sense of belonging and contribution to a community.

It is important to understand whether and how the concepts of engagement and well-being can be meaningfully applied in such a socially and physically dynamic environment as a construction project. The workforce is transient (Kines *et al.* 2010) due to the short-term nature of construction projects and high turnover (Mitropoulos and Cupido 2009). Subcontracting adds to this 'churn' and is intrinsically problematic due to the challenges of co-ordinating different, interdependent trades (Kines *et al.* 2010) and the associated potential for conflict and confusion (Cameron *et al.* 2006).

The purpose of this paper is to examine how academic research, undertaken specifically within the construction industry, has defined the concepts of well-being and engagement, what theories are used to explain these concepts, what evidence exists to support particular engagement or well-being strategies and what outcomes have been found for construction workers and construction companies. This paper forms part of a wider Doctoral research project which is investigating associations between worker engagement and health and safety behaviours by workers.

METHODOLOGY

As this study aims to evaluate the extant literature on a subject area, a literature review is an appropriate methodology (Chermack and Passmore 2005). The search strategy, including the relevant exclusion and inclusion criteria, needs to be clearly articulated (Bryman 2012).

Articles were obtained through an interrogation of the Summons 2.0 database. This is a 'federated search' or 'meta search' facility and performs a simultaneous search across a wide range of academic journals and databases, including publishers and providers such as EBSCO, Emerald and PsycINFO. Summon is a web-scale

discovery service and searches have the ability to reveal abstracts from sources that are not ‘content partners’ (Way 2010).

The search was performed in April 2015 and covered all date ranges. Only scholarly and peer-review papers were sought.

A range of search terms were used to identify relevant articles. “*Construction Industry*”, “*Construction Sector*” and “*Construction Worker*” were used in preference to construction: An initial search revealed that ‘construction’ is a commonplace term and returned large numbers of irrelevant results. Wellbeing and wellness were used as variants of well-being. Finally, the term engagement was used by itself. This was to ensure that articles would be returned regardless of whether they addressed job, work or organisational engagement, employee or worker engagement and so on.

These terms were used in different permutations as both ‘all field’ and ‘abstract or title’ searches. The results are shown on Table 1, below. Each column gives two figures. The second figure (in brackets) is the number of results returned when the search terms were only sought in the abstract or title.

Table 1: The Search Strategy and numbers of articles returned

| Search term(s) and phrase(s) including Boolean operators | Engagement NOT included as a search term | Engagement IS included as a search term |
|---|--|---|
| 1. Engagement | N/A | 491,623 (71.926) |
| 2. Well-being OR wellbeing OR wellness | 486,940 (66,871) | 73,368 (1746) |
| 3. “ <i>Construction industry</i> ” OR “ <i>construction sector</i> ” OR “ <i>construction worker</i> ” | 48,494 (7,996) | 3191 (49) |
| 4. (Search phrase 2) AND (Search phrase 3) | 3861 (38) | 412(1) |

Table 1 shows that a total of 49 articles have specifically investigated some aspect of engagement within the construction industry or in relation to construction workers. 38 articles have specifically examined well-being in this sector. Only a single article has specifically addressed engagement and well-being in the construction industry.

This gave a total of 88 discrete articles. There were read in full and were included if they specifically addressed how well-being or engagement influenced outcomes of individuals working within the construction industry (for example influencing their health or behaviours). Therefore articles which examined well-being of communities or building occupants, or examined stakeholder engagement, were rejected. One paper was rejected as it was a study protocol.

In total there were 8 relevant articles that addressed engagement in construction, 13 papers that addressed well-being in construction, and 1 paper that addressed both. This created a total of 22 papers which are the subject of this literature review.

WELL-BEING IN CONSTRUCTION

Theories of Well-Being

Only a single paper (Mostert *et al.* 2011) used both the terms well-being and engagement within the abstract or title. This suggests that there are different explanations, other than engagement, for how well-being can be defined and promoted. Toor and Ofori (2009: 301) is the only study to provide an overview of well-being literature to explain what they actually mean by well-being. Their

definition is broadly aligned to the framework proposed by Huppert *et al.* (2009): “People’s feelings about themselves, their family, work and social environment”.

The Job Demand Control–Support theory is a popular theory for explaining stress (used by Bowen *et al.* 2013 and 2014, Meliá and Becerril 2007). The remaining nine papers measure associations between phenomenon without an overt, underpinning theory or framework.

Only one study (Broadbent and Papadopoulos 2014) is based on an intervention: These authors examined delegate responses to a suicide prevention programme amongst young men in the Australian construction industry. Two papers measured occupational exposures to health impairing agents: Sleep deprivation and noise (Fernández *et al.* 2009, Powell and Copping 2010). The other papers are based on surveys, interviews and literature reviews.

At present, there is no academic research investigating the impact and practical challenges of introducing a well-being intervention into a construction company or to a construction site. Researchers should also consider explaining what they mean by 'well-being', particularly for a very practical industry like construction.

Defining Well-Being in Construction

In the absence of a clear definitions of well-being, it is necessary to infer what researchers mean by 'well-being' based on the particular focus of their study.

Stress is as an indicator or measure of well-being in five of the fourteen papers. Job satisfaction, emotional exhaustion or mental health are presented as other indicators of psychological well-being (Broadbent and Papadopoulos 2014, Zacher *et al.* 2014).

However, there is a recognition that well-being has physical components as well (Francis and Lingard 2012, Broadbent and Papadopoulos 2014, Sang *et al.* 2007). Some papers go further and only examine well-being in terms of physical injuries, illness or fitness, such as hearing loss (Choi 2009, Fernández *et al.* 2009).

Well-being is used as a measure of both illness and/or wellness. For example, it is possible to measure the factors that damage psychological or physical health and to therefore focus on illness and illness prevention (Meliá and Becerril 2007, Bowen *et al.* 2014, Fernández *et al.* 2009).

In contrast, Mostert *et al.* (2011) perceived burnout to be a consequence of low worker well-being (due to negative work-home interference), and engagement as a result of high worker well-being (caused by positive work-home interference). Therefore, well-being can be enhanced, not just protected (Choi 2009, Toor and Ofori 2009).

It is possible to examine the well-being of construction workers (Choi 2009), or professionals, such as architects (Bowen *et al.*, Sang *et al.* 2007, Toor and Ofori 2009) or both (Francis and Lingard 2012, Meliá and Becerril 2007, Powell and Copping 2010, Zacher *et al.* 2014). Zacher *et al.* (2014) found no differences in their own study on well-being outcomes for blue and white collar workers.

Finally, well-being studies have focussed on occupational or domestic factors that influence well-being, or the interplay between the two. For example, a study into occupational noise exposure (Fernández *et al.* 2009) only examined occupational noise exposure, and not voluntary noise exposure at home. In contrast, work-home conflict is viewed as a factor that influences (or is a measure of) well-being (Bowen *et al.* 2014, Francis and Lingard 2012, Sang *et al.* 2007, Zacher *et al.* 2014,)

Collectively, these studies present well-being as a measure of mental and physical fitness of construction workers and professionals, including their satisfaction and engagement (highlighting the value of examining these concepts together), and it is influenced by their control over occupational and domestic factors. This is a narrower perception of well-being compared to the definition of Huppert *et al.* (2009). For example, the studies of well-being in construction do not cover perceptions of competence, altruism and a sense of belonging to a wider community. Construction companies might increase workers' perceptions of well-being by enhancing their skills or encouraging voluntary work in the community (e.g. offering paid leave for volunteers). This has not been investigated in the eligible studies.

Organisational outcomes of Low well-being

The well-being studies largely focus on and measure individual well-being outcomes, such as stress. Only Meliá and Becerril (2007), Sang *et al.* (2007) and Powell and Copping (2010) measured individual outcomes of worker well-being which would be relevant to their organisation such as intentions to quit, changes to work performance or changes in accident rates. The remaining papers rely on previous studies to provide evidence of the impact of poor worker well-being on organisations or the wider industry (such as professionals leaving to work in other sectors) or simply infer what the organisational consequences may be, such as sickness absenteeism of site managers (Choi 2009, Davidson and Sutherland 1992, Fernández *et al.* 2009, Francis and Lingard 2012, Morrison and Thurnell 2012, Zacher *et al.* 2014).

There has been no investigation of the effect of well-being strategies at the project-level, such as lost production days or the achievement of zero defects at handover (a measure of work quality in construction). Addressing these gaps would help to establish whether there is a business case for introducing well-being interventions.

Improving or safeguarding well-being

The well-being papers sometimes offer practical guidance for employers. For example, making care costs a salary packaged benefit to offer tax benefits, offering a flexible package of benefits for employees to choose from (e.g. flexible working arrangements, reduced working hours, social activities and fitness) and offering emotional support and practical advice through employee assistance programmes (Francis and Lingard 2012, Morrison and Thurnell 2012, Mostert *et al.* 2011). These procedures would normally be managed by human resources departments. It is unclear how measures such as flexible working arrangements, or reducing the endemic problem of long working hours in construction (Bowen *et al.* 2014), could be implemented in construction. It might be achieved, for example, by encouraging and facilitating 'multi-skilling' amongst trade staff to give a pool of resources that could be drawn upon to give greater flexibility. Allocating sufficient workers to a project could enable work to be done in shifts rather than working long hours.

A supportive organisational culture is required to initiate these changes (Francis and Lingard 2012, Morrison and Thurnell 2012). This includes minimising a competitive workplace culture (Bowen *et al.* 2014) perhaps by providing adequate material resources (Zacher *et al.* 2014). Fostering supportive leadership and co-worker support is important and could be promoted by encouraging positive social interactions and training managers (Bowen *et al.* 2014, Meliá and Becerril 2007, Zacher *et al.* 2014).

While Francis and Lingard (2012) recognise that well-being initiatives need to be driven from the 'top down' none of the well-being or engagement papers highlight the

role of the client in improving the lives of construction workers and professionals. Ultimately clients pay for these project, select contractors and consultants and approve or challenge proposed timescales. It would be helpful to provide guidance to clients on how and why they should be supporting well-being and engagement strategies.

The research suggests that good project management skills, including the allocation of sufficient resources, are critical to promoting well-being in construction. Resources include supportive managers. Staff may then feel supported and have reasonable working hours and conditions. It may lead to flexible working arrangements and chances to volunteer. Opportunities to develop worker's skills should be explored.

ENGAGEMENT IN CONSTRUCTION

Overview of engagement studies

One paper (Mostert *et al.* 2011) addresses both engagement and well-being. It is notable that engagement is investigated in relation to safety in five papers (rather than quality, for example). Another theme (in four papers) is the association between engagement and improved learning outcomes for delegates. Three papers were based on interventions (Cameron and Duff 2007, Williams *et al.* 2010, Oude Hengel *et al.* 2012). The remaining papers are based on surveys, interviews and literature reviews.

Definition and consequences of engagement

Engagement is described in a number of ways. Cameron and Duff (2007) appear to equate engagement with toolbox talks, induction, recognition of safe working practices, use of safety committees, including safety in working practices (the term is not explicitly defined, however). Therefore, engagement can be conceptualised as the process of communicating and consulting with workers.

However, engagement can also describe how people feel and think, which might influence how they go on to behave (Conchie *et al.* 2013). Engagement can therefore describe how well someone commits themselves mentally or emotionally to their work or an activity, such as a learning opportunity (Albert and Hallowel 2013, Demerouti *et al.* 2010, Mostert *et al.* 2011).

The papers largely focus on individual consequences. Wang *et al.* (2008) refers to a cost-benefit analysis highlighting advantages of craft training. No papers had similar analyses relating to engagement. It may be inferred that low engagement will increase turnover and absenteeism due to negative attitudes, fatigue and burnout (Conchie *et al.* 2013, Mostert *et al.* 2011) or could contribute to accidents (Williams *et al.* 2010).

The job demands-resources model proposes that high levels of resources promotes personal growth and development, as well as engagement (Mostert *et al.* 2011). None of the studies (either relating to well-being or engagement) specifically measure associations between workers' perceptions of their own competence and their sense of engagement or well-being: This could be an interesting area for future research.

Consequently, like well-being, engagement appears to be perceived in a number of ways. Engagement can be seen as either something we do to workers (e.g. how we involve them) or how they respond in terms of their thoughts, feelings and behaviours.

Practices which engage workers and explanatory theories

According to the job demands-resources model, individuals become engaged when these have sufficient resources (including appropriate training) to perform their roles and when they have adequate support from supervisors and co-workers (Conchie *et al.*

2013, Mostert *et al.* 2011, Williams *et al.* 2010). In common with well-being, engagement is contingent upon support from others and having adequate resources.

To promote a sense of support in construction, supervisor forums could allow issues to be raised and best practice to be shared and different trades could be brought together on site to improve communication and co-operation (Conchie *et al.* 2013).

Performance feedback is one sort of job resource which promotes engagement (Conchie *et al.* 2013, Mostert *et al.* 2011). Engagement is enhanced when workers are given ownership of and a sense of control over their work and working arrangements (Conchie *et al.* 2013, Kulchartchai and Hadikusumo 2010, Mostert *et al.* 2011).

Cameron and Duff (2007) found that performance can be raised through goal-setting, monitoring and feedback. While this approach may not seem 'engaging', goals were set collaboratively and were supported by an action plan allocating responsibilities and resources to support those goals. It is therefore possible that the demands were seen positively, managers felt involved and valued, and considered the resources to be adequate. Consequently, even a very task-oriented industry, like construction, can take a 'softer' approach to managing projects and their workforce, although managers would need to be selected and trained to adopt these skills and involve workers.

Providing workers with opportunities to learn and use a variety of skills promotes engagement (Conchie *et al.* 2013, Mostert *et al.* 2011), although the strength of this association is unclear. Training providers might use a hands-on, participatory approach, drawing on and valuing the experience of workers (Albert and Hallowel 2013, Williams *et al.* 2010). Williams *et al.* (2010) found that participatory, peer-led training led to behavioural changes, perhaps due to improved engagement with the material. In contrast, Oude Hengel *et al.* (2012) speculated that problems with the delivery of training accounted, in part, for their finding that physical therapy and empowerment training had no effect on worker engagement or social support. Formal training is only one way to develop construction workers: On-site mentoring and coaching are valuable approaches (Wang *et al.* 2008) and these skills could be taught to site managers to improve how they develop and support workers.

It is notable that engagement and well-being both appear to be promoted by ensuring that adequate resources are available, giving workers control over their work and working arrangements and helping individuals to feel supported by co-workers and managers. Well-being and engagement are both considered to influence, or are a measure of, worker's thoughts, feelings and perceptions. Such overlaps are to be expected given the view that engagement is simply one element of well-being (Huppert *et al.* 2009, Schaufelli 2014). A key difference between the concepts is that well-being includes aspects of physical health. Theoretical models suggest that a link exists between feeling competent and feeling engaged and well. This was not covered in the eligible studies and may be worthy of further investigation.

CONCLUSIONS

Efforts to promote well-being and engagement during the Olympics big build, and the theoretical association between the concepts, suggested that it may be worthwhile examining the concepts together. Only 22 papers have specifically examined how engagement and well-being strategies in construction influence outcomes for people working in the sector. Nonetheless, these highlight gaps in extant research and indicate what companies might do to promote both well-being and engagement.

In terms of a research agenda, the research community would benefit from defining what well-being means in the context of construction: The conceptual framework proposed by Huppert *et al.* (2009) suggests that there is more to this construct than simply preventing stress or achieving a good work-life balance. It would be useful to build on the work of Oude Hengel *et al.* (2012) to develop interventions and examine the practical challenges (and benefits) of applying well-being and engagement strategies in construction. It would be helpful to identify what impact these have on clients, as ultimately they can help to drive these initiatives through their supply chain.

The concept of engagement has been examined in relation to safety performance in five papers. This current paper forms part of a wider research project to evaluate whether engaging workers is an effective means of improving safety in construction.

It is worth noting that studies investigating well-being and engagement in construction have been drawn towards the Job Demand Control–Support theory or Job Resources-Demands model. It may reflect the pragmatic nature of the industry that research in this sector use explanatory models that contrast demands with resources. Future research might investigate the utility of other theoretical models in construction.

There are a range of practical measures for improving well-being and engagement. Managers need to be trained in effective leadership skills (enabling them to involve, coach and support workers and manage the relationships within their team). Project management skills and support are needed to ensure that sufficient resources are allocated to projects and used effectively. Workers should be offered (and will be engaged by) a blend of participatory training, mentoring and coaching and the ensuing sense of competence is a measure of well-being. There is also a need for a range of human resources procedures around flexible working arrangements, employee assistance programmes and other formal mechanisms to support workers.

REFERENCES

- Albert, A. and Hallowel, M. (2013) Revamping occupational safety and health training: Integrating andragogical principles for the adult learner. *"Australasian Journal of Construction Economics and Building"*, **13**(3), 128-140.
- Bowen, P., Edwards, P. and Lingard, H. (2013) Workplace Stress Experienced by Construction Professionals in South Africa. *"Journal of Construction Engineering and Management"*, April, 393-403.
- Bowen, P., Edwards, P. and Lingard, H., Cattell, K. (2014) Occupational stress and job demand, control and support factors among construction project consultants. *"International Journal of Project Management"*, **32**, 1273-1284.
- Broadbent, R. and Papadopoulos, T. (2014) Improving mental health and wellbeing for young men in the building and construction industry. *"Journal of Child and Adolescent Mental Health"*, **26**(3), 217-227.
- Bryman, A. (2012) *"Social Research Methods"*, 4th edn. Oxford University Press: Oxford.
- Cameron, I., Hare, B., Duff, R. and Maloney, P. (2006) *"An investigation of approaches to worker engagement"*, RR516. Sudbury: HSE Books.
- Cameron, I. and Duff, R. (2007) Use of performance measurement and goals setting to improve construction managers' focus on health and safety. *"Construction Management and Economics"*, **25**, 869-881.
- Chermack, T. and Passmore, D. (2005). Using journals and databases in research. In R. A. Swanson, R. and Holton, E. (eds.) *"Research in organizations: Foundations and methods of inquiry"*, San Francisco, CA: Berrett-Koehler, 401-418.

- Choi, S. (2009) Safety and ergonomic considerations for an aging workforce in the US construction industry. *“Work”*, **33**, 307-315
- Conchie, S., Moon, S. and Duncan, M. (2013) Supervisors' engagement in safety leadership: Factors that help and hinder. *“Safety Science”*, **51**, 109-117.
- Davidson, M. and Sutherland, V. (1992) Stress and Construction Site Managers: Issues for Europe 1992. *“Employee Relations”*, **14**(2), 25-38.
- Demerouti, E., Mostert, K. and Bakker, A. (2010) Burnout and Work Engagement: A Thorough Investigation of the Independency of Both Constructs. *“Journal of Occupational Health Psychology”*, **5**(3), 209-222.
- Fernández, M., Quintana, S. and Ballesteros, J. (2009). Noise exposure of workers of the construction sector. *“Applied Acoustics”*, **70**, 753-760.
- Francis, V. and Lingard, H. (2012) The case for family-friendly work practices in the Australian construction industry. *“The Australian Journal of Construction Economics and Building”*, **2**(1), 28-36.
- Healey, N. and Sugden, C. (2012) *“Safety Culture on the Olympic Park”*. RR942. HSE Books.
- Huppert, F., Marks, N., Clark, A., Siegrist, J., Stutzer, A., Vittersø, J. and Wahrendorf, M. (2009) Measuring Well-being across Europe: description of the ESS well-being module and preliminary findings. *“Social Indicators Research”*, **91**, 301-315.
- Kines, P., Andersen, L., Spangenberg, S., Mikkelsen, K., Dyreborg, J. and Zohar, D. (2010) Improving construction site safety through leader-based verbal safety communication. *“Journal of Safety Research”*, **41**, 399-406.
- Kulchartchai, O. and Hadikusumo, B. (2010) Exploratory Study of Obstacles in Safety Culture Development in the Construction Industry: A Grounded Theory Approach. *“Journal of Construction in Developing Countries”*, **15**(1), 45–66, 2010.
- MacLeod, D. and Clarke, N. (2009) *“Engaging for success: Enhancing Performance through employee engagement”*. Department for Business, Innovation and Skills.
- Meliá, J. and Becerril, M (2007) Psychosocial sources of stress and burnout in the construction sector: A structural equation model. *“Psicothema”*, **19**(4), 679-686.
- Mitropoulos, P., and Cupido, G. (2009) The role of production and teamwork practice in construction safety. *“Journal of Safety Research”*, **40**, 265-275.
- Morrison, E. and Thurnell, D. (2012) Employee preferences for work-life benefits in a large New Zealand construction company. *“Australasian Journal of Construction Economics and Building”*, **12**(1), 12-25.
- Mostert, K., Peeters, M. and Rost, A. (2011) Work-home Interference and the Relationship with Job Characteristics and Well-Being: A South African Study among Employees in the Construction Industry. *“Stress and Health”*, **27**, 238-251.
- Oude Hengel K., Blatter B., Joling C., van der Beek A., Bongers P. (2012) Effectiveness of an intervention at construction worksites on work engagement, social support, physical workload, and need for recovery: Results from a cluster randomized controlled trial. *“BMC Public Health”*, **12**, 1-10.
- Powell, R., and Copping, A. (2010) Sleep Deprivation and Its Consequences in Construction Workers. *“Journal of Construction Engineering and Management”*, October, 1086-1092.
- Sang, K., Dainty, A. and Ison, S. (2007) Gender: a risk factor for occupational stress in the architectural profession? *“Construction Management and Economics”*, **25**, 1305-1317.

- Schaufeli, W (2014) What is engagement, in C. Truss, R. Delbridge, K. Alfes, A. Shantz and E. Soane (eds.) *“Employee Engagement in Theory and Practice”*, Oxon: Routledge.
- Shuck, B. and Wollard, K. (2010) Employee engagement and HRD: A seminal review of the foundations. *“Human Resource Development Review”*, **9**(1), 89-110.
- Toor, S. and Ofori, G 2009. Authenticity and its influence on psychological well-being and contingent self-esteem of leaders in Singapore construction sector. *“Construction Management and Economics”*, **27**, 299-313.
- Truss, C., Shantz, A., Soane, E., Alfes, K., Delbridge, R. (2013) Employee engagement, organisational performance and individual well-being: exploring the evidence, developing the theory. *The International Journal of Human Resource Management*, **24**(14), 2657-2669.
- Truss, C., Delbridge, R., Alfes, K., Shantz, A. and Soane, E. (2014) Introduction, in C. Truss, R. Delbridge, K. Alfes, A. Shantz and E. Soane (eds.), *“Employee Engagement in Theory and Practice”*, Oxon: Routledge, 1-11.
- Wang, Y., Goodrum, P., Haas, C. and Glover, R. (2008) Craft Training Issues in American Industrial and Commercial Construction. *“Journal of Construction Engineering and Management”*, October, 795-803.
- Way, D. (2010) The Impact of Web-scale Discovery on the Use of a Library Collection. *“Serials Review”*. **38**(4), 214-220
- Williams, Q., Ochsner, M., Marshall, E., Kimmel, L. and Martino, C. (2010) The impact of a peer-led participatory health and safety training program for Latino day laborers in construction. *“Journal of Safety Research”*, **41**, 253-261.
- Zacher, H., Bordia, P. and Jimmieson, N (2014) Time Pressure and Coworker support Mediate the Curvilinear Relationship Between Age and Occupational Well-being. *“Journal of Occupational Health Psychology”*, **19**(4) 462-475.