

2017 REPORT

THE STATE OF WELL-BEING IN THE **CONSTRUCTION INDUSTRY**

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This report was prepared for the Chartered Institute of Building by Professors Keith Cattell and Paul Bowen of the University of Cape Town, Professor Sir Cary Cooper¹ CBE, of the University of Manchester and Robertson Cooper Ltd, and Adjunct Professor Peter Edwards of RMIT University.

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EXECUTIVE SUMMARY

The current survey of CIOB members was conducted in 2016 using two psychometrically validated scales: *A Shortened Stress Evaluation Tool (ASSET)* (two core scales were used: *6 Essentials*; and *Psychological Well-being*); and the *Work-related Resilience Scale*; used to measure well-being and resilience, respectively. The findings of previous *ASSET* surveys conducted between 2010 and 2014, involving 36,928 people from various organisations in the private and public sectors, are collated in a database and referred to in this study as the *General Working Population (GWP) 2015 norm*, or the 'norm group'. The findings of the current study were benchmarked against the norm group where possible to evaluate the relative state of well-being and resilience in the construction industry, with a view to recommending ways of improving well-being and enhancing business outcomes. The results (see Figure 1), although partially positive (green shading), highlight some areas of concern (amber and red shading).

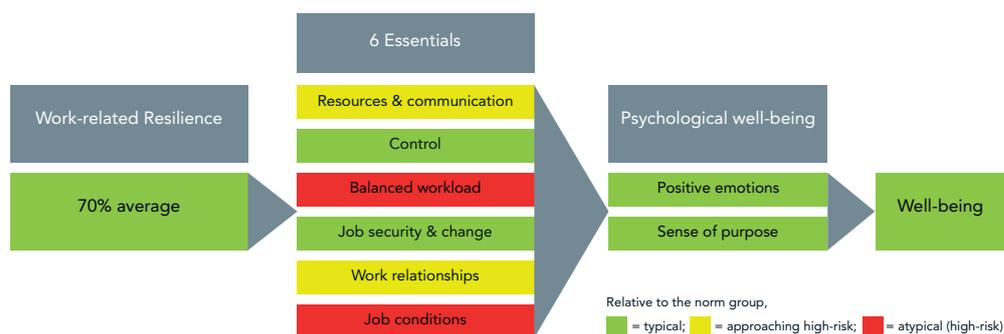


Figure 1: Scales used and outcome of the current study

Only two of the *6 Essentials* scales, i.e. *Control* and *Job security & change*, show construction professionals to be typical compared to the norm group. *The Resources & communication* and *Job conditions* scales measured them as approaching high-risk, and the *Balanced workload* and *Work relationships* scales were atypical, indicating high-risk areas.

The two *Psychological Well-being* subscales, *Positive emotions* and *Sense of purpose*, both indicated that construction professionals were typical compared to the norm group (despite several aspects of the *6 Essentials* being either in the high-risk area, or approaching high-risk).

The *Work-related Resilience* scale portrays construction professionals as a resilient group (70% average). This means they are confident, adaptable and motivated by the perceived worth of their job goals to persevere in the face of difficulties.

In all of the *ASSET* scales (except *Work-life balance*) and the *Work-related Resilience* scale, job status, i.e. being an owner, director, partner or manager, was found to be a significant factor influencing well-being, with employees significantly worse off than managers and those with senior status. Women were found to be significantly less confident, and therefore less resilient, than men.

Relative to the norm group, construction professionals were at high risk of experiencing ill-being due to the influence of several items in the *Work-life balance*, *Workload* and *Work relationships* scales, which reflect a bleak workplace and an unhappy work experience. Many of these problems could easily be addressed at the firm level, especially *Work relationships*.

Recommendations are made regarding how organisations might address the highlighted problems. They include improving feedback on performance, improving employee participation and levels of control, understanding and responding to perceptions of technology overload, establishing and/or improving employee support systems, and providing clarity about likely job trajectories.

FOREWORD

The prevalence of mental health and well-being issues in the consciousness of society is increasing. In England and Wales, it is estimated that one in six working age adults experience depression, anxiety or stress related issues in any given week, a pattern that is generally replicated across the developed world – it's a growing public health concern on both a national and international scale.



At a workshop on mental health and well-being that I chaired at the CIOB's Members' Forum event in Cardiff earlier in 2017, it was shocking and sobering to see just how many of the international audience said that they had known somebody in the construction industry that had committed suicide.

This is not just anecdotal evidence; in the UK in the period between 2010 and 2015, there were more suicides among construction employees than any other profession. Data from the Office for National Statistics shows that those working in construction are 63% more likely to die by suicide than the national average. However, until recently, it appears that the industry has not treated mental health with much urgency. Compared with the laudable zero harm culture that is now commonplace on site, there has been a marked contrast in the attention paid to well-being.

In our roles in the industry, all of us have likely encountered stress and impacts on our psychological well-being. It is such a rewarding career in so many ways, but it is also true to say that the industry can be a high pressure environment for some, with varying work patterns, tight deadlines, long hours and frequent travel. Some thrive in this atmosphere while others struggle, and the onus needs to be on employers to provide a set of conditions, processes and practices that allow all to enjoy their work, feel valued and contribute productively.

Construction has had a problem addressing mental health but good work is happening out there. Initiatives such as the Health in Construction Leadership Group and Mates in Mind have placed the issue firmly on the industry's agenda and organisations are making major improvements by collaborating together.

As the professional body for construction management and leadership, the CIOB has to be at the forefront of addressing and improving well-being in our industry, encouraging organisations and individuals to make the changes they need to while supporting best practice and cutting-edge research.

This is why I am delighted to support this report that has been diligently put together by Professors Keith Cattell and Paul Bowen FCIQB of the University of Cape Town, Professor Sir Cary Cooper CBE, of the University of Manchester and Robertson Cooper Ltd, and Adjunct Professor Peter Edwards of RMIT University.

It is clear from the report that construction does have a unique set of conditions compared to other sectors, but that the problems are not insurmountable. Looking to the future, if we want to attract the brightest and best young people to our sector as well as encourage experienced professionals to stay, having an industry that cares and provides conditions for its employees to thrive is absolutely vital.

Rebecca Thompson FCIQB, President of the Chartered Institute of Building

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The authors acknowledge psychological well-being specialists Robertson Cooper Ltd. who gave permission for the use of the *ASSET* and *Work-related Resilience* scales, assisted in the collection of data, and provided support in the analysis.

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| INTRODUCTION

The 2006 CIOB report on Occupational Stress in the Construction Industry (CIOB, 2006), along with other initiatives (for example, Constructing Better Health, 2007) raised awareness around work-related stress as an issue in the UK construction industry, and is often cited in this regard. The focus of the CIOB research was on construction professionals, rather than workers. It took into account the respondents' occupations and roles within their organisations, workplace environments, organisations themselves, public impressions of the industry and site safety, with the purpose of identifying the main causes of occupational stress. It also investigated coping mechanisms employed by respondents.

More than a decade has passed since the CIOB study was published and work-related stress is still a major concern. The Labour Force Survey gives days lost in the UK due to work-related stress, depression or anxiety injury, as ± 10 million in 2005/6 and ± 12 million in 2015/16 (Health and Safety Executive, 2016). The 'professional occupations' category had the highest prevalence of 1,980 days lost per 100,000 people employed, considerably higher than the average for all occupations of 1,230 cases per 100,000 (Health and Safety Executive, 2016). As working practices continue to evolve in response to the development of the information and communication technologies, escalating the perceived pace of work and life, work-related stress presents as a growing problem (Derks *et al.*, 2015), mainly caused by high workloads, stringent deadlines, and excessive pressure and/or responsibility (Health and Safety Executive, 2016).

The current study was conceived with the intention of updating the 2006 CIOB study and improving on its methodological limitations. The limitations mentioned in the 2006 CIOB report were that: (i) it was likely to have attracted responses from those suffering from occupational stress, as opposed to a balanced sample (a weakness that may also be true of the current study, but which unavoidably derives from the web-based survey method), and; (ii) the validity and reliability of the data could not be verified. In designing the current study, the latter of these limitations was addressed by using two psychometrically-validated scales, *A Shortened Stress Evaluation Tool (ASSET)* (Faragher *et al.*, 2004) and the *Work-related Resilience* scale (Robertson Cooper, 2012). In addition to permitting reliability and validity verification, the use of these scales facilitates comparison to norms established in similar surveys using the same instruments in other industries.

2 PURPOSE

In addition to updating the 2006 CIOB report on occupational stress (CIOB, 2006), the analysis in this report includes independent samples *t*-tests aimed at identifying significant differences between: managers (managers, owners, partners and directors - grouped and hereinafter referred to as 'managers') and employees; women and men; and people older than 40 years (hereinafter referred to as 'over 40') and people 40 years and younger (hereinafter referred to as 'under 40'). The results of these tests are reported in each section of the analysis with the relevant statistics presented as footnotes.

The *t*-tests essentially test hypotheses that assume significantly different responses would not be obtained from these groups, at a 95% confidence level. Interpretation of the results should be done with caution with respect to women respondents (7% of the sample), where the low numbers might not accurately represent this group.

3 METHOD

3.1 Primary data collection

The survey population consisted of chartered members (i.e., MCIOB and FCIOB members) of the CIOB, worldwide. Working with psychological well-being specialists Robertson Cooper Ltd. for the collection of the data, we emailed corporate members details of the URL for online access to the *ASSET* and *Work-related Resilience* questionnaires, and asked them to participate. Although the majority (83%) of respondents were from Europe, 17% collectively came from Africa, Asia, Australia and North America. Thus, the geographical scope of the survey was significantly different compared with the 2006 CIOB study, which only reported data for UK respondents.

Of the 918 responses received, 790 were suitable for analysis after elimination of missing values cases. This represents 2.2% of the total professional membership of the CIOB. Respondents described their job functions as being construction management (34%), project management (29%), quantity surveying (16%), architecture (2%), engineering (3%), and 'other' (16%). Forty-two per cent described themselves as Chartered Builders and 58% described themselves as Chartered Construction Managers. Dual membership of CIOB and other professional bodies was reported as follows: Royal Institution of Chartered Surveyors (RICS) (21%); Institution of Civil Engineers (ICE) (4%), Royal Institute of British Architects (RIBA) (1%), and 'other' (75%). Presumably such 'other' affiliations related to membership of non-UK professional bodies. Respondents described their roles in organisations as partners/owners/directors (52%), registered professional employees (26%), and employees (22%).

3.2 Questionnaire items

The study employed the psychometrically-validated *ASSET* scale (Faragher *et al.*, 2004), a model of workplace well-being and the *Work-related Resilience* scale (Robertson Cooper, 2012). Supplementary questions, designed to gather demographic information, respondents' characteristics, and details of employment, were also included in the survey.

The 'core' scales of the *ASSET* model used for this study comprised the '6 Essentials' and 'Psychological Well-being' (see Figure 2).

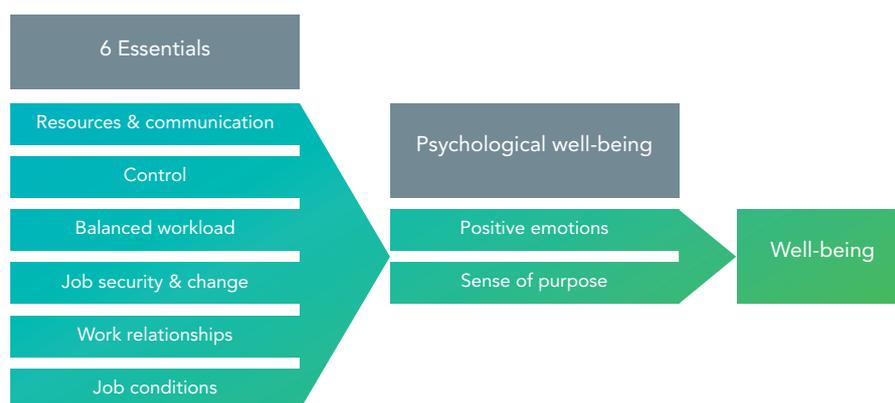


Figure 2: The ASSET model core scales

All items in the *6 Essentials* scales are preceded by the phrase: "I am troubled that..." Examples include:

- (i) **Resources & communication scale** - "I do not feel I am informed about what is going on in this organization" and "I am not adequately trained to do many aspects of my job";
- (ii) **Control scale** - "I have little control over many aspects of my job" and "My ideas or suggestions about my job are not taken into account";

- (iii) **Balanced workload scale** comprises two subscales: **Work-life balance scale**; and **Workload scale**. Examples of questions in these subscales are: **Work-life balance** - “*I work longer hours than I choose or want to*” and “*I spend too much time travelling in my job*”; **Workload** - “*The technology in my job has overloaded me*” and “*I am given unmanageable workloads*”;
- (iv) **Job security and change scale** - “*My job is insecure*” and “*My job skills may become redundant in the near future*”;
- (v) **Work relationships scale** - “*My boss behaves in an intimidating and bullying way towards me*” and “*My relationships with colleagues are poor*”; and
- (vi) **Job conditions scale** - “*My physical working conditions are unpleasant (e.g., noisy, dirty, poorly designed)*” and “*My pay and benefits are not as good as other people doing the same or similar work*”

Regarding their *Psychological Well-being*, respondents were asked how often, during the last three months, they had felt like what was expressed in the questionnaire statement. Examples of the statements are as follows:

- (i) Sense of purpose scale - “*My current job goals are specific*” and “*I am committed to achieving the goals of my job*” and;
- (ii) Positive emotions scale - “*Inspired*”, “*Enthusiastic*”, “*Contented*”.

In the *Work-Related Resilience* scale respondents were asked to give their level of agreement (0-100) with statements that measure resilience, using the constructs of confidence, adaptability, social support and purposefulness. Examples of these are, respectively:

- (i) “*right now at work I feel confident that I can deal with difficulties when they arise*”;
- (ii) “*at the moment, I adapt my approach to deal with work challenges as they come up*”;
- (iii) “*these days I feel that I will get the support I need to meet my job challenges*”, and
- (iv) “*I feel that my current job goals are really worth striving for*”.

3.3 The General Working Population comparison (norm) group

The results from the current survey were compared to the results of the *General Working Population (GWP) 2015 data*. The GWP norm group represents the responses of 36,928 people who completed the *ASSET* and *Work-related Resilience* questionnaires between 2010 and 2014. The individuals surveyed come from a broad range of organisations and industries, with one-third from the public sector and two-thirds from the private sector. Public sector organisations included local governments, universities, the National Health Service, police organisations, and European Government bodies. The private sector organisations included those from financial services, and the pharmaceutical, engineering/construction, retail and manufacturing industries. The vast majority of the surveys were initiated from the UK, but several of the private sector surveys covered employees from other countries. The GWP 2015 norms provide a useful baseline against which to compare the results of the current study, since they can be regarded as a proxy for the general population.

3.4 Sten scores

When comparing the data from the current survey to the norm group a 1 to 10 (sten) score is produced for each *ASSET* measurement scale and for each item within each scale, and similarly, for the *Work-related Resilience* items. Colour shading indicates ranges of responses. Scores in the light green range indicate a response (e.g. to work-life balance) that is typical of the norm group used for comparison. A more extreme score (in the bright green or red range) indicates that participants have responded atypically (e.g., more or less stressed by working relationships). The bright green range is more positive (low risk) and the red range is less positive (high-risk). Scores in the amber range are defined as ‘approaching high-risk’. The scores reported as stens are therefore not absolute scores, but an indication of how the results fare relative to the comparison group.

3.5 Raw scores

An average raw score is provided for each *ASSET* item, as well as an indication of where the majority of responses were found. The red vertical bar on the raw score diagram represents the mean score. The grey horizontal bar shows the range in which 68% of the participants' raw scores fell (i.e., within one standard deviation either side of the mean). Finally, the green vertical bar represents the mean score for the norm group used in the comparison. The rating scales (e.g., 1-5, 1-6) used for the questions are provided in a key above and below the figures.

4 FINDINGS

4.1 Characteristics of the sample

Most participants were male (93%), with almost two-thirds (62%) in the combined 41-60 year old category. The median age was in the 41-50 year group. Most respondents (88%) were either married or living with a partner. Whilst the mother tongue of respondents was mostly English (85%), followed by 'other' (8%), Cantonese (2%), Arabic (2%), and Mandarin (1%), the *language of work* was overwhelmingly English (97%), followed by Cantonese (1%).

Most respondents emanated from Europe (83%), followed by Asia (9%), Africa (6%), Australia/Oceania (2%), and North America (1%). Most reported working in their country of citizenship (79%). Of the 145 respondents not working in their native country, most reported working in the United Arab Emirates (24%), Qatar (19%), and the United Kingdom (17%).

Most respondents (57%) had in excess of 25 years industrial experience. Experience within their current organisation was as follows: not exceeding 5 years (51%); 6-10 years (18%); and 11-15 years (12%). A minority (12%) had been with the same organisation for at least 20 years, most employed on a full-time basis (86%), with 7% employed on a fixed-term contract basis.

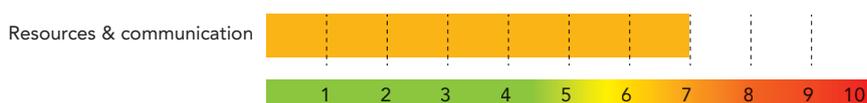
A minority of members (14%) reported working less than 40 hours per week. Most (45%) reported working 41-50 hours per week, with 29% reportedly working 51-60 hours per week. A minority (13%) claimed to work in excess of 60 hours a week. Fifty per cent (50%) claimed to spend less than an hour travelling to and from work each day, with 44% reporting 2-3 hours travelling time each day.

4.2 The 6 Essentials

4.2.1 Resources & communication

This scale measured the extent to which respondents were concerned about a lack of resources and/or inadequate communication.

Figure 3: Sten scores for the Resources & communication scale



Overall, this scale shows an approaching high-risk score, relative to the norm group (see Figure 3). It can be seen in Figure 4 that the main cause of this heightened risk is *lack of feedback on performance*.

A significant difference was found in the scores for managers and employees², with employees being more concerned than managers about a lack of resources and/or inadequate communication. No significant differences were found between women and men, nor between people under 40 and over 40.

² Independent-samples t-tests:
Managers (M=11.22, SD=4.15),
employees (M=13.13, SD=4.45);
t(785)=-6.22, p=0.00

Figure 4: Sten scores for the Resources & communication scale items

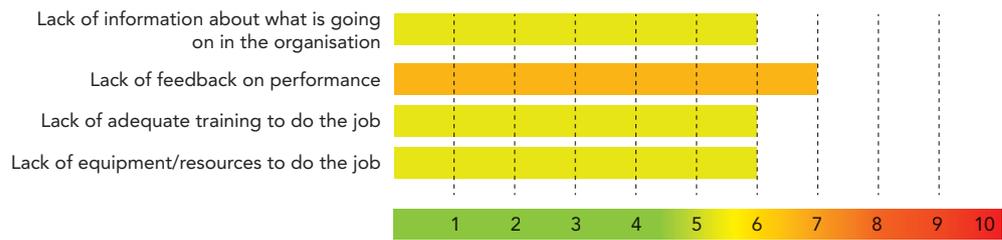
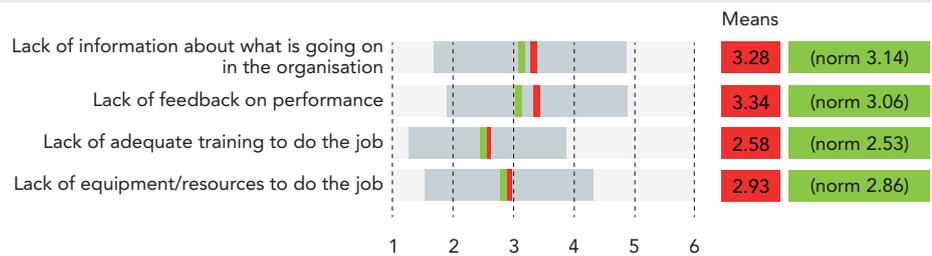


Figure 5: Raw scores for the Resources & communication scale items



Note: norm = mean of the General Working population 2015 data

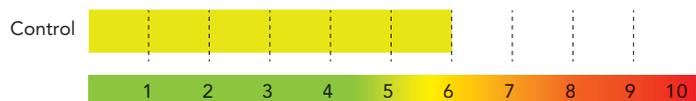
The raw scores (i.e., from the current survey only), show that *lack of adequate training to do the job* and *lack of equipment/resources to do the job* attracted lower levels of disagreement than did the other items in the scale (see Figure 5).

All the mean values of the raw scores (see Figure 5) were greater for construction professionals than for the norm group. This indicates that they perceived themselves to be relatively more troubled about all of these issues. The greatest difference between the mean values concerned the issue of *lack of feedback on performance*, indicating that construction professionals were the most concerned about this particular issue, relative to the norm group.

4.2.2 Control

This scale measured the extent to which a lack of control, i.e., feeling unable to influence a situation, was a source of concern.

Figure 6: Sten scores for the Control scale



The overall finding for the *Control* scale was typical relative to the norm group (see Figure 6). However, Figure 7 indicates a result approaching high-risk for one item, where respondents felt troubled that their *ideas/suggestions* about the job were not being taken into account, to a greater extent than the norm group.

A significant difference was found between the scores for managers and employees³, with employees being more concerned about their lack of control, involvement or influence over aspects of the job than were managers. No significant differences were found between women and men, nor between people under 40 and over 40.

³ Independent-samples t-tests: Managers (M=12.03, SD=5.02), employees (M=14.44, SD=4.86); t(784)=-6.82, p=0.00

Figure 7: Sten scores for the Control scale items

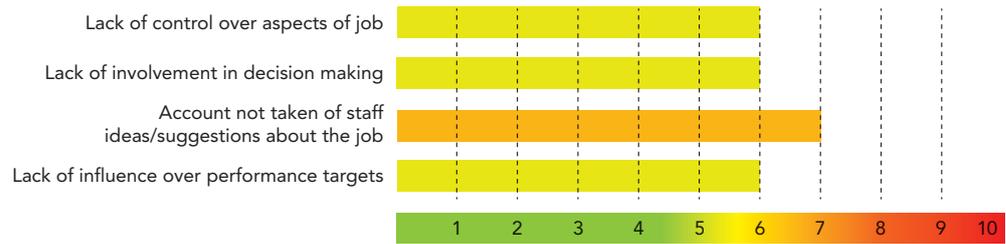


Figure 8: Raw scores for the Control scale items



Note: norm = mean of the General Working population 2015 data

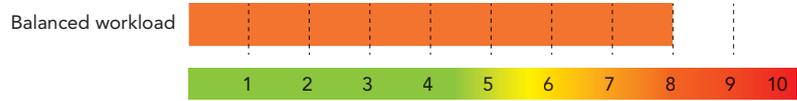
The raw scores indicate that *account not being taken of staff ideas/suggestions* and *lack of influence over performance targets* both attracted a higher level of disagreement than did the other two items in the scale (see Figure 8).

A comparison of the mean values of the raw scores (see Figure 8) for construction professionals and the norm group shows them to be equal for one item and greater for construction professionals in all other items. The equality of the mean values for *lack of influence over performance targets* indicates that both groups shared the same level of concern over this issue and the higher mean values for construction professionals in all of the other items indicates that they perceived themselves to be more troubled about these issues than respondents in the norm group.

4.2.3 Balanced workload

This scale measured a combination of two related pressures, namely, workload and the need for work-life balance.

Figure 9: Sten scores for the Balanced workload scale



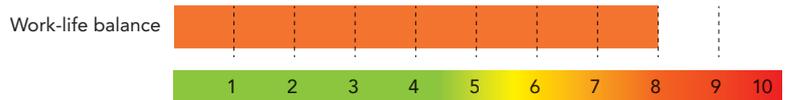
The score for the *Balanced workload* scale shows it to be a high-risk area compared with the norm group (see Figure 9). No significant differences were found for this scale neither between managers and employees, women and men, nor between people under 40 and over 40.

In the following two sections the scores for this scale are reported at the level of its subscales, namely, *Work-life balance* and *Workload*.

4.2.3.1 Work-life balance

This subscale measured the extent to which difficulty in maintaining a satisfactory work-life balance was a source of concern for respondents.

Figure 10: Sten scores for the Work-life balance subscale



The *Work-life balance* subscale indicates a high-risk area compared with the norm group (see Figure 10). All of the subscale items, except unsocial hours (which was approaching high-risk), were high-risk compared with the norm group (see Figure 11). The most serious problems were *excessive travel time*, long hours and *work interfering with home/personal life*.

No significant differences were found between managers and employees, women and men, nor between people under 40 and over 40.

Figure 11: Sten scores for the Work-life balance subscale items

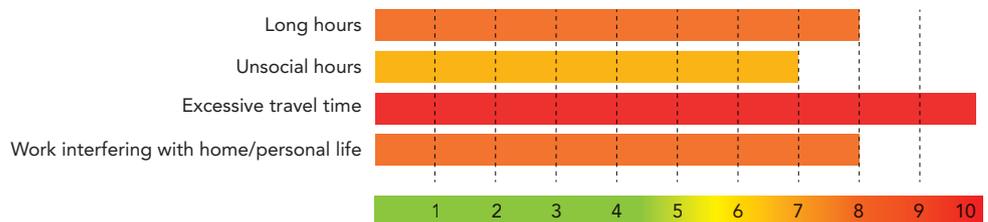


Figure 12: Raw scores for the Work-life balance subscale items



Note: norm = mean of the General Working population 2015 data

The raw scores show that two items, namely, *long hours* and *work interfering with home/personal life* were perceived by construction professionals as more problematic than were the other two items.

The mean values of the raw scores (see Figure 12) were all found to be higher for construction professionals, indicating that they were more troubled by all of the items than were respondents in the norm group. The biggest differences between the mean values were for *excessive travel time* and *long hours*, which were perceived as more problematic than the other two items. This was also reflected in the responses to the demographic questions, where 42% of the respondents reported working in excess of 50 hours per week and 44% reported travelling 2-3 hours per day to and from work.

4.2.3.2. Workload

This subscale measured the extent to which individuals felt the demands of their workload and associated time pressures were a source of concern.

Figure 13: Sten scores for the Workload subscale



The *Workload* subscale score (see Figure 13) can be seen to be high-risk compared with the norm group. All items in the scale were high-risk compared with the norm group (see Figure 14), except *lack of time*, which was approaching high-risk. The most serious problems were perceived to be *technology overload* and *unrealistic deadlines*.

⁴ Independent-samples t-tests: Managers (M=12.78, SD=4.49), employees (M=14.16, SD=4.80); t(782)=-4.17, p=0.00

A significant difference was found in the scores for managers and employees⁴, with employees being more concerned about workload and time pressure than were managers. No significant differences were found between women and men, nor between people under 40 and over 40.

Figure 14: Sten scores for the Workload subscale items

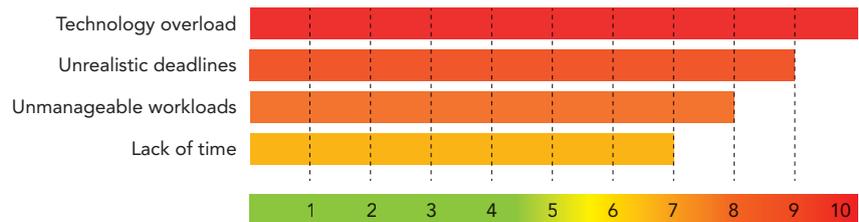


Figure 15: Raw scores for the Workload subscale items



Note: norm = mean of the General Working population 2015 data

Figure 15 indicates that *Technology overload* was perceived to be less of a problem for respondents and *lack of time* as more of a problem, relative to the other scale items.

A comparison of the raw score mean values for construction professionals and the norm group show all of them to be higher for construction professionals, indicating their greater concern about the issues (see Figure 15). The greatest differences in the mean values were *technology overload* and *unrealistic deadlines*, which were perceived to be more problematic than the other two scale items.

4.2.4 Job security & change

This scale measured the extent to which job changes and job insecurity were perceived sources of concern.

Figure 16: Sten scores for the Job security & change scale

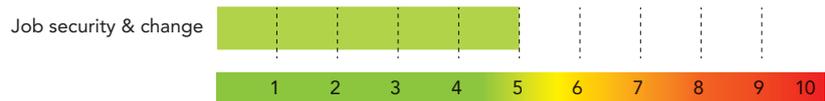


Figure 16 indicates that respondents' concerns over *Job security & change* were typical compared with the norm group. All of the items (see Figure 17) were scored in the typical range, but the item *organisation changes for changes' sake* was perceived to considerably less of a problem relative to the norm group.

⁵ Independent-samples t-tests: Managers (M=13.40, SD=5.16), employees (M=14.81, SD=5.09); $t(781)=-3.86, p=0.00$

A significant difference was found in the scores for managers and employees ⁵, with employees being more concerned about job changes and job insecurity than were managers. No significant differences were found between women and men, nor between people under 40 and over 40.

Figure 17: Sten scores for the Job security & change scale items



Figure 18: Raw scores for the Job security & change scale items



Note: norm = mean of the General Working population 2015 data

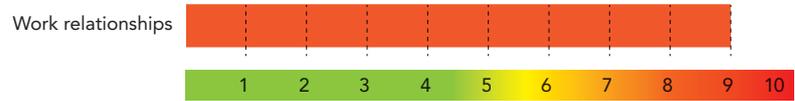
Figure 18 indicates that respondents expressed the least concern, relative to the other scale items, over whether or not their jobs were permanent (i.e., full-time or contract), and the most concern over *job insecurity* and *organisation changes for change's sake*.

Comparing the raw score mean values for construction professionals and the norm group, it can be seen that *job insecurity* and *lack of job permanence*, were greater for the former, indicating that they perceived these items to be slightly more problematic (see Figure 18). All of the other items (*organisation changes for change's sake*, *future job change* and *fear of skill redundancy*) had lower mean values for construction professionals, indicating that they caused less concern, particularly *organisation changes for change's sake*.

4.2.5 Work relationships

This scale measured the extent to which work relationships were a source of concern.

Figure 19: Sten scores for the Work relationships scale



The *Work relationships* scale (Figure 19) shows that construction professionals were far more concerned about work relationships than were respondents in the norm group. All of the scale items, except *boss is forever finding fault* (which was atypical, approaching high-risk), were found to be high-risk, compared to the norm group (see Figure 20). The biggest differences between construction professionals and the norm group occurred in perceptions of *isolation at work*, *poor relationships with colleagues* and *lack of support from others*.

⁶ Independent-samples t-tests: Managers (M=21.25, SD=7.99), employees (M=24.01, SD=8.32); $t(781)=-4.72, p=0.00$

A significant difference was found between the scores for managers and employees ⁶, with employees being more concerned about *Work relationships* than were managers. No significant differences were found between women and men, nor between people under 40 and over 40.

Figure 20: Sten scores for the Work relationships scale items

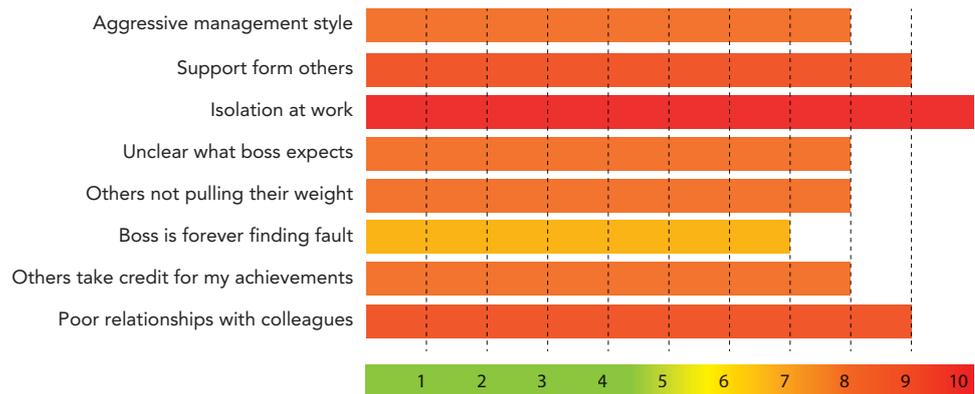


Figure 21: Raw scores for the Work relationships scale items



Note: norm = mean of the General Working population 2015 data

Figure 21 shows, relative to the other items in the scale, construction professionals were less concerned about *aggressive management style*, *others take credit for my achievements* and *poor relationships with colleagues*; but more concerned about others *not pulling their weight* and (lack of) *support from others*.

A comparison of the raw score mean values for construction professionals and the norm group show the mean values for construction professionals to be higher for all items (see Figure 21), indicating that they were more concerned about all of the issues. The biggest differences between the mean values of the two groups were in *isolation at work*, followed by *others not pulling their weight* and (lack of) *support from others*, indicating that these were more pressing concerns than the other items.

4.2.6 Job conditions

This scale measured concerns about incentives, working conditions and satisfaction.

Figure 22: Sten scores for the Job conditions scale

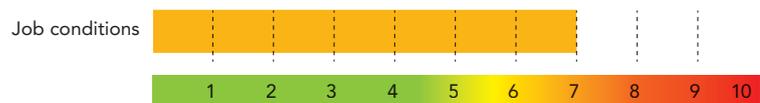


Figure 22 shows concerns among construction professionals about Job conditions to be approaching high-risk. The main causes of this *were dealing with difficult customers/clients* and *lack of enjoyment of job* (see Figure 23). The items *job unlikely to change in the next 5-10 years* and *work performance closely monitored* were also found to be causes of concern approaching high-risk.

Significant differences were found in the scores for managers and employees⁷, and between people under 40 and over 40⁸, with employees and people under 40 being more concerned about *Job conditions* than were managers and people over 40. No significant differences were found between women and men.

⁷ Independent-samples t-tests: Managers (M=21.91, SD=7.06), employees (M=24.76, SD=7.43); t(780)=-5.51, p=0.00

⁸ Under 40 (M=24.41, SD=7.58), over 40 (M=22.89, SD=7.27); t(780)=2.50, p=0.013

Figure 23: Sten scores for the Job conditions scale items



Figure 24: Raw scores for the Job conditions scale items

Note: norm = mean of the General Working population 2015 data

An analysis of Figure 24 shows, relative to other items in the scale, that construction professionals were the least concerned about the *risk of physical violence* and *poor physical working conditions*, and the most concerned about *comparatively poor pay and benefits* and *job unlikely to change in the next 5-10 years*.

A comparison of the raw score mean values for construction professionals and the norm group reveals that all, except *poor physical working conditions*, were higher for the former group (see Figure 24), indicating that they were more concerned about these issues. The biggest differences between the mean values was in the areas of *risk of physical violence* and *job unlikely to change in next 5-10 years*, indicating that the norm group was relatively less concerned about these two than the other issues.

4.3 Psychological Well-being

4.3.1 Positive emotions

This scale measured the extent to which people experience positive emotions at work.

Figure 25: Sten scores for the Positive emotions scale

From Figure 25 it can be seen that construction professionals' experience of *positive emotions* at work was typical of the norm group. Figure 26 shows that, although all items were essentially typical of the norm group, reported feelings of *inspired*, *alert*, and *determined* appeared to be experienced more (lower risk) than the other scale items.

⁹ Independent-samples t-tests: Managers (M=22.57, SD=6.29), employees (M=20.88, SD=6.02); $t(779)=3.83, p=0.00$

A significant difference was found in the scores for managers and employees⁹; with managers experiencing positive emotions to a greater extent than employees. No significant differences were found between women and men, nor between people under 40 and over 40.

Figure 26: Sten scores for the Positive emotions scale items

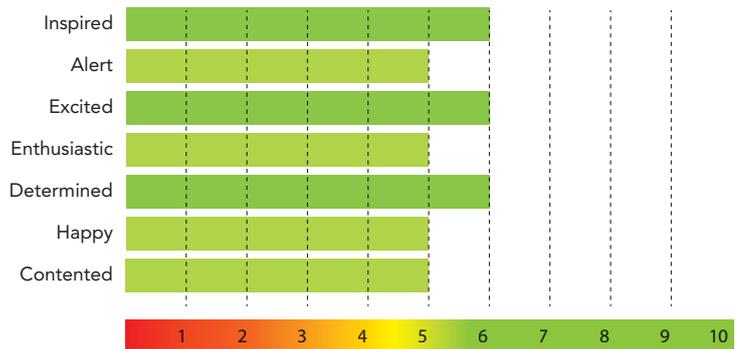
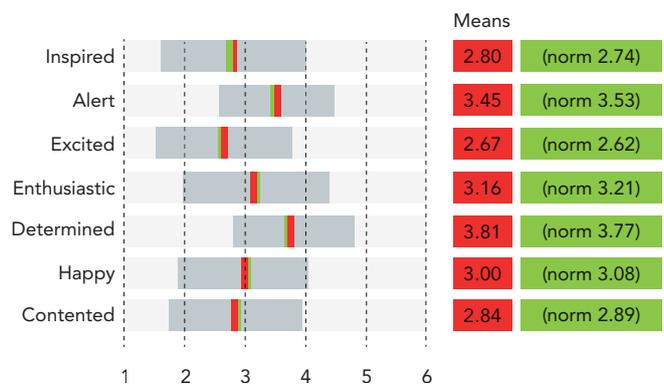


Figure 27: Raw scores for the Positive emotions scale items



Note: norm = mean of the General Working population 2015 data

From Figure 27 it can be seen that the emotion felt most strongly by construction professionals, relative to other emotions, was *determined*, while *inspired*, *excited*, and *contented* were experienced to a lesser extent.

Comparing the raw score mean values for construction professionals and the norm group, it can be seen that *alert*, *enthusiastic*, *happy* and *contented*, were lower for construction professionals, and higher for *inspired*, *excited* and *determined* (see Figure 27). Respectively, this indicates that construction professionals experienced the first set of items less often, and the second set more often, than did the norm group. The biggest differences between the mean values, indicating areas of relatively more importance, were for the items *alert* and *happy*, with construction professionals experiencing these emotions to a lesser extent than the norm group, and *inspired*, which they experienced to a greater extent, relative to the other items in the scale.

4.3.2 Sense of purpose

This scale measured the extent to which respondents' views of their work goals give them a sense of purpose.

Figure 28: Sten score for the Sense of purpose scale



Figures 28 and 29 show that construction professionals' experience of a *sense of purpose* at work was typical of the norm group. This is true for the overall scale, as well as for all of its items.

¹⁰ Independent-samples t-tests: Managers (M=18.49, SD=3.88), employees (M=17.37, SD=4.16); $t(785)=3.90, p=0.00$

¹¹ Men (M=18.05, SD=4.04), women (M=16.55, SD=4.04); $t(784)=2.57, p=0.01$

Significant differences were found in the scores for managers and employees¹⁰; and women and men¹¹, with managers and men experiencing a *sense of purpose* to a greater extent than did employees and women. No significant differences were found in the experience of a *sense of purpose* between people under 40 and over 40.

Figure 29: Sten scores for the Sense of purpose scale items

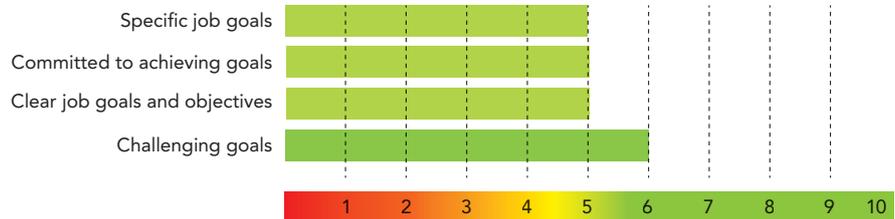
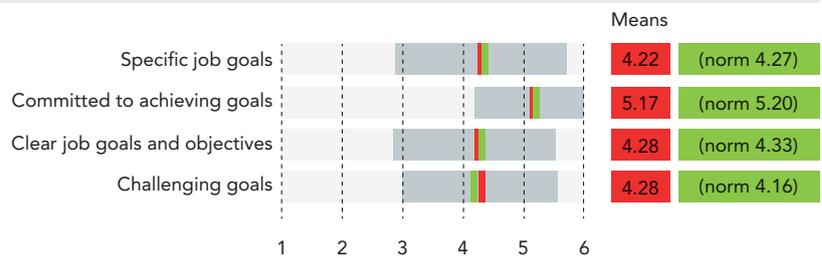


Figure 30: Raw scores for the Sense of purpose scale items



Note: norm = mean of the General Working population 2015 data

Figure 30 shows that construction professionals were relatively more motivated by being *committed to achieving job goals* than they were by the other scale items.

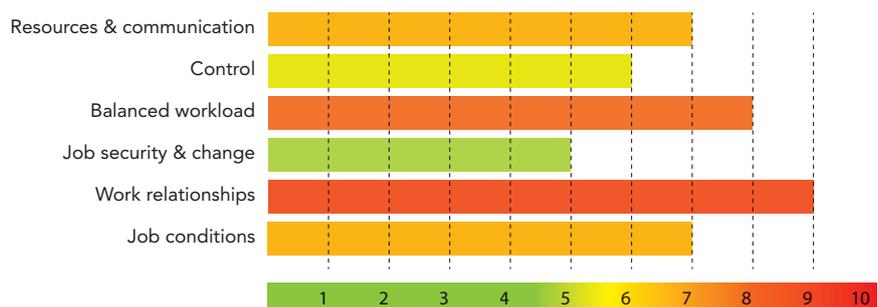
Comparing the raw score mean values for construction professionals and the norm group, it can be seen that three items (*specific job goals*, *committed to achieving job goals* and *clear job goals and objectives*) were lower for the former group (see Figure 30) and one (*challenging goals*) was higher. Lower mean values indicate that they were less motivated by these items than were respondents in the norm group. Conversely, they were more motivated by *challenging goals* than were the norm group.

4.4 Summary

The overall findings of the *ASSET* survey are shown in Figures 31 and 33, where, respectively, the sten scores for the *6 Essentials* and *Psychological Well-being* scales are presented.

Only two of the *6 Essentials* scales, i.e. *Control* and *Job security & change*, show construction professionals to be typical compared to the norm group. *The Resources & communication* and *Job conditions* scales were found to be approaching high-risk, and the *Balanced workload* and *Work relationships* scales were atypical, high-risk, areas.

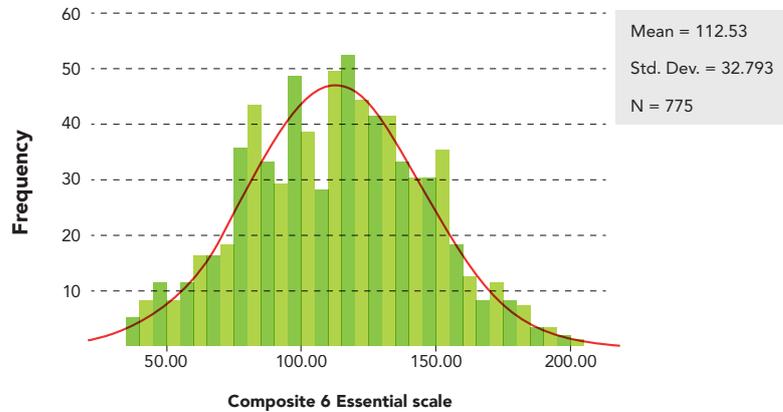
Figure 31: Overall ASSET sten scores for the 6 Essentials



¹² Comparison to the norm group is not available

Combining the 6 *Essentials* scales into a new *Composite 6 Essentials* scale, the mean of the raw scores is positioned approximately midway in the range, indicating a normal distribution (see Figure 32¹²).

Figure 32: Frequency distribution - Composite 6 Essentials scale

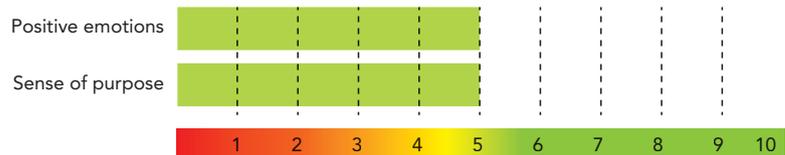


¹³ Independent-samples t-tests:
Managers (M=106.63, SD=31.68),
employees (M=118.83, SD=32.83);
 $t(773)=-5.265, p=0.00$

Using this scale, a significant difference was found between managers and employees¹³, with employees being more concerned about the issues represented (i.e., all items of all 6 *Essentials* scales, unweighted) by the *Composite 6 Essentials* scale than were managers. No significant differences were found between women and men, nor between people under 40 and over 40.

Both of the *Psychological Well-being subscales*, *Positive emotions* and *Sense of purpose* portrayed construction professionals to be typical, compared to the norm group (see Figure 33). This indicates that their experience of *Positive emotions* and a *Sense of purpose* were aligned with the norm group, despite several items in the 6 *Essentials* being either in the high-risk area, or approaching high-risk.

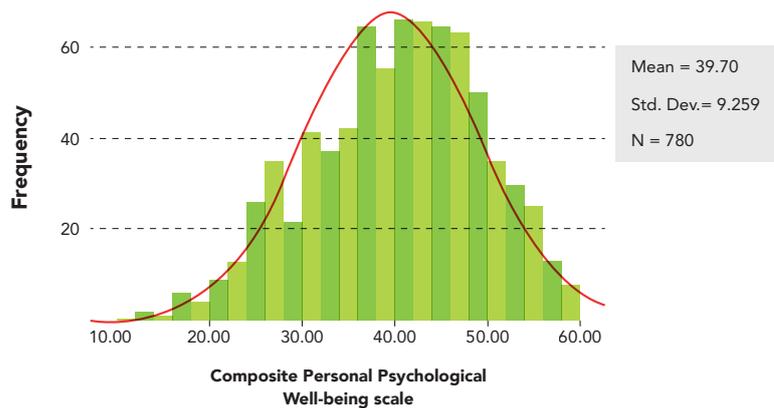
Figure 33: Overall ASSET sten scores for Psychological Well-being



These two scales were combined to create a new *Composite Personal Psychological Well-being scale*. The mean of the 780 valid responses is slightly higher than midway in the range, indicating that the level of personal psychological well-being is generally better than average (see Figure 34¹⁴).

¹⁴ Comparison to the norm group is not available

Figure 34: Frequency distribution - Composite Personal Psychological Well-being scale



¹⁵ Managers (M=41.05, SD=9.18), employees (M=38.25, SD=9.14); $t(778)=4.276, p=0.00$

¹⁶ Women (M=36.88, SD=9.93), men (M=39.90, SD=9.19); $t(777)=2.25, p=0.03$

Independent-samples t -tests indicated significant differences in the *Composite Personal Psychological Well-being* scale between managers and employees¹⁵ and between women and men¹⁶, with employees and women, respectively, being worse off than managers and men. No significant differences were found between people under 40 and over 40.

4.5 Work-related Resilience

Resilience is a multidimensional construct that includes individual differences such as neurobiological factors and personality, in addition to specific skills that help people to cope with and overcome obstacles (Campbell-Sills *et al.*, 2006). Robertson Cooper's four-component model of resilience is drawn from current theories of resilience in the research literature (Charney, 2004; Southwick *et al.*, 2005; Davydov *et al.*, 2010).

The *Work-related Resilience* scale (Robertson Cooper, 2012) measures the four constructs of: *confidence*; *adaptability*; *social support*; and *purposefulness*. Each component is a broad construct that encompasses various personality traits, behaviours and skills. For example, *social support* includes the degree of one's natural sociability (a personality trait), but also includes coping strategies (behaviours) such as making time to nurture friendships even when work demands are at their highest. Respondents used a slider scale¹⁷ (1-100) to indicate their level of agreement with twelve statements. As in the preceding section, three independent-samples t -tests were conducted for each scale to compare differences in the scores between: managers and employees; women and men; and people under 40 and over 40.

¹⁷ A visual analogue ordinal scale that obtains essentially qualitative data (Kero and Lee, 2015)

4.5.1 Overall Work-related Resilience

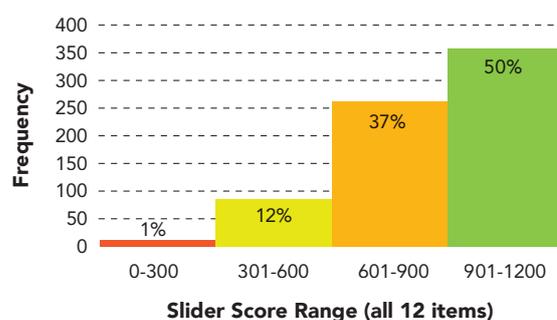
The average Resilience score for the norm group was 73%. The average score for construction professionals was 70%¹⁸, with managers (74%) scoring higher than employees (66%).

¹⁸ Based on 784 respondents.
Resilience score =
 $(\sum \text{all scores}/784)/12$

¹⁹ N=707; M=875.11; SD=228.30

A composite *Overall Work-related Resilience* scale, i.e. including the scores from all twelve resilience items¹⁹, was created (see Figure 35) to provide an overview of resilience and to contextualise the resilience constructs presented in the next section. Figures 36 to 40 group responses in quartiles, which are referred to in the reporting.

Figure 35: Overall Work-related Resilience scale



Fifty per cent and 37% of the respondents scored their overall resilience in the fourth and third quartiles, respectively. With only 13% scoring themselves in the first two quartiles, construction professionals clearly perceive themselves to be a fairly resilient group.

²⁰ Independent-samples t -tests:
Managers (M=915.67, SD=212.64), employees (M=829.81, SD=236.82); $t(673)=5.05, p=0.00$

A significant difference was found between the scores for managers and employees²⁰, with employees being less resilient than managers. No significant differences were found between the resilience levels of women and men, nor between people under 40 and over 40.

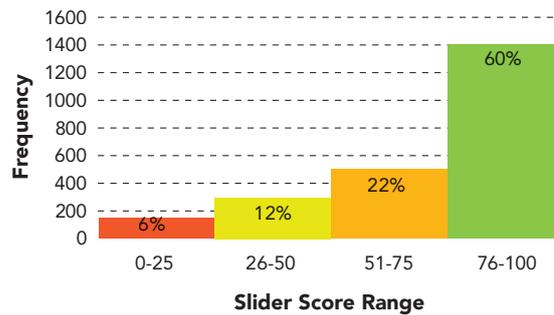
4.5.2 Work-related Resilience constructs

The reporting in this section uses the following format. First, the average score is given for the construct and the norm group, followed by a graph showing the distribution of the scores and noting the number of respondents who scored 0 and 100 (respectively, total disagreement and total agreement with the statement). Next, the distribution is explained, and finally the results of the three independent-samples *t*-tests are reported.

4.5.2.1 Confidence

This scale comprised three statements that measure confidence, for example, “*Right now at work I feel confident that I can deal with difficulties when they arise*”. The average level of confidence was 75%, slightly higher than the 72% of the norm group.

Figure 36: Confidence score



Completely disagree (0) n=10 (<1%); completely agree (100) n=484 (21%)

Twenty-one per cent of the respondents felt completely confident to deal with difficulties and challenges at work. Sixty per cent and 22% scored their confidence level in the fourth and third quartiles, respectively, with the remaining 18% scoring it in the first two quartiles (see Figure 36).

A significant difference was found between the scores for managers and employees²¹ and women and men²², with employees and women feeling less confident to handle difficulties than did managers and men. No significant differences were found between people under 40 and over 40.

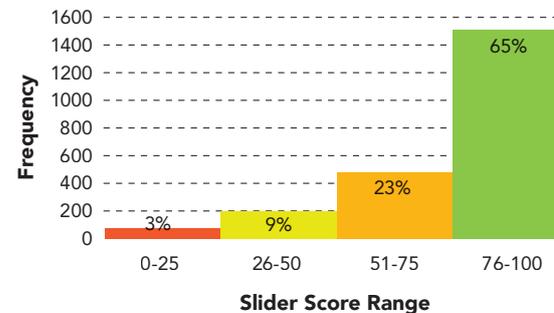
²¹ Independent-samples *t*-tests: Managers (M=240.52, SD=58.19), employees (M=217.58, SD=65.92); *t*(727)=5.06, *p*=0.00

²² Women (M=193.16, SD=77.25), men (M=231.96, SD=61.26); *t*(52)=3.44, *p*=0.00

4.5.2.2 Adaptability

This scale comprised three statements that measure adaptability; for example, “*When I hit difficulties at work these days I adapt my behaviour to find a way forward*”. The average level of adaptability was 79%, very similar to the 80% of the norm group.

Figure 37: Adaptability score



Completely disagree (0) n=4 (<1%); completely agree (100) n=555 (24%)

Twenty-four per cent of the respondents felt that they always (completely agree) adapted their behaviour if difficulties arose at work. Sixty-five per cent and 23% scored their level of adaptability in the fourth and third quartiles, respectively. Taken together with the relatively low (3%) frequency of scores in the first quartile, this is clearly regarded as an area of strength by respondents (see Figure 37).

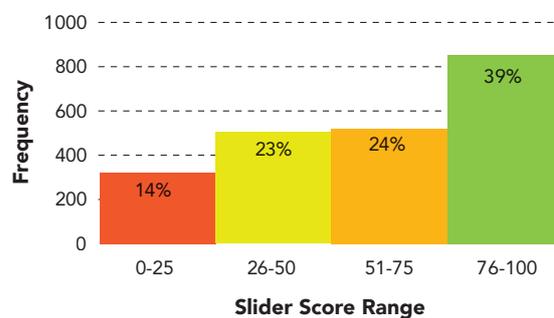
²³ Independent-samples t-tests: Managers (M=240.52, SD=58.19), employees (M=217.58, SD=65.92); t(727)=5.06, p=0.00

A significant difference was found in the scores for managers and employees²³, with employees being less adaptable than managers. No significant differences were found between women and men, nor between people under 40 and over 40.

4.5.2.3 Social support

This scale comprises three statements that measure social support, for example, “*Right now I feel that I can rely on getting support when problems arise with my job*”. The average level of perceived social support was 61%, considerably lower than the 68% of the norm group.

Figure 38: Social support score



Completely disagree (0) n=9 (<1%); completely agree (100) n=350 (16%)

Sixteen per cent of the respondents felt completely sure they would receive support would if something went wrong at work. Thirty-nine per cent and 24% scored their perception of the availability of social support in the fourth and third quartiles, respectively. The large difference between respondents and the norm group clearly derives from the large proportion (37%) of responses that were scored in the first two quartiles (see Figure 38).

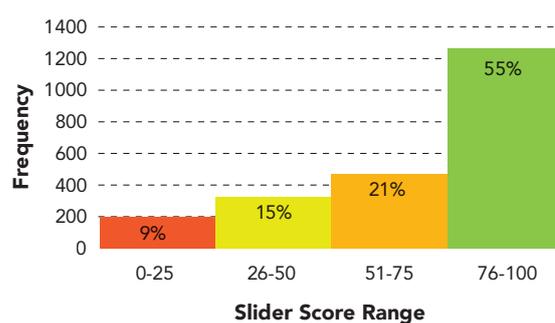
²⁴ Independent-samples t-tests: Managers (M=203.14, SD=72.76), employees (M=181.40, SD=81.21); t(690)=3.78, p=0.00

A significant difference was found between the scores for managers and employees²⁴, with employees feeling less sure of the availability of support if needed than did managers. No significant differences were found between women and men, nor between people under 40 and over 40.

4.5.2.4 Purposefulness

This scale comprised three statements that measure purposefulness, for example, “*The fact that my current job goals are worthwhile helps me to keep going when problems arise*”. The average level of purposefulness was 66%, similar to the 69% of the norm group.

Figure 39: Purposefulness score



Completely disagree (0) n=6 (<1%); completely agree (100) n=473 (21%)

Twenty-one per cent of the respondents reported being completely motivated to keep going if problems arose at work, because they felt their job goals were worthwhile. Fifty-five per cent and 21% scored themselves in the fourth and third quartiles, respectively. The remaining 24% scored themselves in the first and second quartiles (see Figure 39).

²⁵ Managers (M=220.70, SD=72.28), employees (M=188.75, SD=81.00); $t(708)=5.63, p=0.00$

A significant difference was found between the scores for managers and employees ²⁵, with employees being less motivated to keep going if problems arose at work than were managers. No significant differences were found between women and men; nor between people under 40 and over 40.

5 DISCUSSION

The *Resources & communication* scale of the *6 Essentials* indicates that construction professionals were approaching high-risk compared with the norm group, caused by lack of *feedback on performance*. People need constructive feedback to perform effectively in their jobs and good communication can also be a powerful source of inspiration and motivation (Faragher et al., 2004). Feedback assists one in predicting the onset of a stressor, and thus may act as an important moderator of stress (Bakker et al., 2005). *Lack of feedback on performance* was a problem reported by both managers and employees and, although it was significantly more of a problem for employees, feedback clearly needs to be improved in both manager-manager and manager-employee relationships.

Although construction professionals were aligned with the norm group on the *Control scale*, they

were approaching high-risk on the issue of their *ideas and suggestions not being taken account of*. A perceived lack of control, or decision latitude, over how people choose to do their work, or

whether they feel able to influence their situation can be a major source of stress (Faragher et al., 2004). Research has shown that the perception of control over their situation empowers people to make active attempts to resolve problems and encourages them to approach their work in a positive way (Karasek, 1979). Increased control can be a safeguard against the negative effects of other pressures such as work-life imbalance and heavy workloads.

Construction professionals were worse off than the norm group in terms of having a *Balanced workload*. This was evident in both the *Work-life balance* and *Workload subscales*, which were either high-risk, or approaching high-risk and is consistent with the findings of previous construction industry research (Bowen et al., 2014b). *Excessive travel time* was highlighted as a particularly acute problem, as were *technology overload* and *unrealistic deadlines*. Respondents reported that they felt overloaded by “the technology” in their jobs, but the questionnaire

did not allow them to specify what they meant by that. This is a limitation that should be addressed in future studies. One can speculate, however, that it refers to: the pace and nature of new software development, e.g., building information modelling tools (although this is not supported by the finding that *lack of adequate training to do the job* was typical compared with the norm group); it could refer to communication overload (e.g., time spent on computers and smartphones doing emails, texting, etc.); or it could refer to the latent fear of change felt by many workers regarding the use of new office technologies generally (Cooper, 2005; Leung et al., 2005). Excessive travel time could include: the frequency of business travel (away from home); daily commuting; or frequent site visits (away from office). All three of these are potential stressors (Alluisi, 1982; Ivancevich et al., 2003; Leung et al., 2005). Tight or unrealistic deadlines have been shown to be common stressors in the construction industry (Yip et al., 2008; Bowen et al., 2014a). Impending deadlines create a context in which people are working under time pressure, which, although common in the project-based construction industry (Lingard et al., 2010), can be a major source of stress (Sutherland and Davidson, 1989; Menon and Akhilesh, 1994; Faragher et al., 2004; Ibem et al., 2011).

Generally, a good balance between people’s work and non-work lives is an important contributor to their overall psychological well-being, and poor work-life balance has been described as the primary cause of occupational stress (Industrial Society, 2001; Faragher et al., 2004). As work and work-related demands increase, people may experience a negative impact in their personal lives, leading to divided loyalties as they try to meet the needs of their organisation as well as those of family and friends (Lingard and Francis, 2009; Lingard et al., 2010; Bowen et al., 2014a).

Construction professionals’ *Work relationships* were found to be a high-risk area compared with the norm group. The most acute problem, *isolation at work*, had two aspects to the question – working alone and lack of social support from others. It is not possible to tell whether the responses reflect one of these aspects more than the other, but considering that lack of support from bosses and colleagues was also one of the highest risk items, it is assumed that the problem is more about a lack of social support from others. This, taken together

The *Resources and communication* scale indicates that construction professionals were approaching high-risk compared to the norm group, caused by lack of feedback on performance

The overall average *Work-related resilience* score for construction professionals was lower than the norm group's... lower resilience is associated with increased risk of being diagnosed with a mental health disorder

with a high level of concern over poor relationships with colleagues, leads to the inference that this is a complex problem, particularly for employees. Good relationships at work can be energising and can contribute to the achievement of high levels

of engagement and satisfaction. They can also help people to cope with work pressure and to maintain performance under challenging conditions (Faragher *et al.*, 2004). Conversely, poor relationships

with managers and colleagues can cause strain and have a detrimental effect on health and performance (Faragher *et al.*, 2004). Moreover, social support is recognised as a buffer against job stress (Van der Doef and Maes, 1999; Viswesvaran *et al.*, 1999).

Relative to the norm group, construction professionals were more concerned about not enjoying their jobs and dealing with difficult customers and clients. Job satisfaction is important to people's overall psychological well-being (Kalleberg, 1977; Faragher *et al.*, 2005) and employers should be concerned that this was found to be a high-risk area, more so for people 40 years and younger. The other approaching high-risk items, i.e., concerns about work being monitored too closely and that the job was unlikely to change in the next 5-10 years could be related to job dissatisfaction (Firth *et al.*, 2004). High staff turnover is detrimental to an organisation, while staff retention and succession planning are beneficial (Parker and Skitmore, 2005). Depending on their career orientation (see, for example, Tschopp *et al.*, 2014) who define the spectrum as: independent; loyalty-focused; promotion-focused; or disengaged), high turnover can also be detrimental to the individuals involved, as they suffer from various stressors (O'Driscoll and Beehr, 1994) leading up to the decision to quit. Although employees and people under 40 are largely the same group, it is clear that organisations are at risk of not realising the full potential of their younger employees, both currently and in the future.

The overall average *Work-related Resilience* score for construction professionals was 70%. This was lower than the norm group's 73% – an important indicator, as lower resilience is associated with increased risk of being diagnosed with a mental health disorder (Bezdjian *et al.*, 2017). People in management roles were more resilient (74%) than employees (66%). This could reflect that resilient employees are more likely to be promoted in organisations, or leave to start their own enterprises. A high level of resilience is also advantageous if one is to be an effective manager, given the differences in pressure experienced by managers and employees. Resilience is described as a malleable, dynamic process and therefore suitable for intervention (Robertson *et al.*, 2015) and, for example, research on post-traumatic stress disorder patients has shown that treatment can improve resilience (Connor and Davidson, 2003). In a workplace context, intervention training has been shown to be potentially beneficial, particularly in tackling stress, anxiety, depression and negative emotions among employees (Robertson *et al.*, 2015).

A high self-esteem and feeling competent and effective in coping with stressful situations are inherent to feeling resilient. It is also influenced by how frequently one experiences positive and negative emotions (Robertson Cooper, 2012). Construction professionals appear to be more *confident* with an average score of 75% for the confidence construct, compared with the norm group's 72%. This is reflected in the findings that less than 1% regarded himself or herself as completely unconfident to handle difficulties at work, while 21% felt completely confident. Further, 50% scored their agreement with the statements representing the construct in the fourth quartile. These scores are, however, influenced by the significantly greater levels of confidence reported by managers, relative to employees. Employees were significantly less confident than managers, as were women significantly less confident than men. It is inferred from this that women employees are a particularly vulnerable group, lacking in confidence to deal with job-related difficulties. A lack of confidence and the experience of negative emotions lower resilience and the ability to cope (Campbell-Sills *et al.*, 2006; Bartone *et al.*, 2009).

Resilience requires adaptability, i.e., one must be flexible and able to adapt to changing situations beyond one's control. Resilient people cope well with change and bounce back more quickly. Individuals who are able to think flexibly, produce alternate explanations, reframe events positively, and accept challenging situations tend to be more psychologically resilient than more inflexible thinkers (Haglund *et al.*, 2007). The adaptability of construction professionals is high and very similar to the norm group (79% and 80%, respectively).

The adaptability of construction professionals is high... supported by the findings that less than 1% regarded themselves as completely unable to adapt in dealing with difficulties at work

This is supported by the findings that less than 1% regarded himself or herself as completely unable to adapt in dealing with difficulties at work, whilst 24% felt completely adaptable and 65% scored their agreement or

otherwise with the construct's statements in the fourth quartile. Again, it was found that managers were significantly more adaptable than employees. Given that a high level of adaptability improves resilience and the ability to cope, employers should be concerned that this difference exists.

Being in good relationships with work colleagues and seeking their *support* when it is needed empowers people to overcome adverse situations more easily (Holahan *et al.*, 1995; Resick, 2001). The absence of support in the face of difficulties undermines resilience and increases work-related stress. Relative to the norm group (68%), construction professionals (61%) felt considerably less supported by colleagues when challenges and difficulties arose at work. This is evident in the finding that only 16% completely agreed that support would be given when needed. Further, only 39% scored their agreement with the three

statements constituting the construct in the fourth quartile. Managers, more than employees, reported a significantly greater level of confidence that support would be given. The low level of perceived support required to meet challenges or rectify problems was also evident in the *Work Relationships* scale (see Figures 20 and 21), where support from others was seen to be lower among construction professionals relative to the norm group.

Purposeful behaviour is characterised by drive and direction (Campbell-Sills *et al.*, 2006). It has a particular goal in mind, a clear sense of purpose, and is underpinned by clear values (Robertson Cooper, 2017). The statements constituting the purposeful construct emphasise the connection between job goals and their perceived worthiness, as a catalyst for motivation and perseverance. Construction professionals (66%) have a lower average purposefulness score compared with the norm group (69%). Nevertheless, a relatively high number of respondents (20%) completely agreed that their job goals motivated them to persevere in the face of difficulties and 55% scored their agreement with the statements constituting the construct in the fourth quartile. A significantly higher level of purposefulness was found for managers than for employees. Purposefulness is beneficial to overall resilience, and the absence of it undermines resilience and increases work-related stress. It was seen from the *Job Conditions* scale (see Figures 24 and 25) that construction professionals appeared not to enjoy their jobs, compared to the norm group. These issues might be related. However, there was no indication that a general problem existed concerning job goals (in terms of specificity, clarity, commitment to them and level of challenge), if we consider the results in the *Sense of Purpose* scale (see Figures 30 and 31). Rather, the influence of purposefulness as a catalyst for perseverance is not being realised.

6 CONCLUSIONS

Overall, construction professionals compare unfavourably with the GWP 2015 norm group, with four of the *6 Essentials* scales indicating areas that should be of concern to the construction industry. This was, however, not evident in the *Psychological Well-being* scales, where they compared favourably with the GWP 2015 norm group.

An overarching conclusion, based on the *t*-tests for significant differences, is that in all scales of the *6 Essentials* (except for *Work-life balance*) and *Psychological Well-being*, employees were significantly worse off than managers and thus more prone to ill-being. Further, notwithstanding the *caveat* that the number of women respondents (7% of the sample) was low, significant differences were found for women, relative to men, in their overall *Personal Psychological Well-being*, which includes and is influenced by *sense of purpose*, as well as the *confidence* construct of resilience.

Two issues classified as ‘approaching high risk’, namely, *lack of feedback* and *lack of control* would be easy to address because it is within the power of organisations to do so. Similarly, the ‘high-risk’ issues: *Work-life balance* (long hours, excessive travel time and *work interfering with family/home life*); *Workload* (technology overload, unrealistic deadlines and unmanageable workloads); *Job conditions* (dealing with difficult customers/

clients and lack of enjoyment of job); and *Work relationships* (aggressive management style, lack of support from others, isolation, lack of clear expectations, others not pulling their weight, others claiming credit for my achievements and poor relationship with colleagues), which depict a bleak workplace and an unhappy work experience, could be addressed by organisations, especially *Work relationships*. However, if they are widespread, this will require an industry-level culture change, which seems unlikely to occur in the short-term. Nevertheless, this should not stand in the way of firms doing what they can to improve matters.

The overall *Work-related Resilience* score of 70% for construction professionals suggests that they typically have personal qualities that make them resilient, particularly among managers (74%).

It is concluded that adaptability levels are high and can be considered typical compared with other industries. Confidence levels are higher than the norm relative to other industries, but not in the case of women, which suggests that this is an area requiring intervention.

It is further concluded that construction professionals work in a relatively unsupportive context and that they therefore lack purposefulness, relative to the norm. This is a concern, but also an opportunity for intervention.

7 RECOMMENDATIONS

The following recommendations suggest how organisations might address the conclusions.

- Improve the practice of giving feedback on performance, especially to employees, but also to managers.
- Introduce processes that solicit employee input about how they think their jobs should be done, and consider how greater employee control over their situations can be achieved.
- Set more realistic deadlines where possible; take excessive travel time into account and attempt to reduce it where it is part of the job; and reduce technology overload. This would need to involve investigations aimed at defining exactly which technologies tend to give employees a feeling of being overloaded, coupled with appropriate support. Such support might need to involve the redefinition of business processes and personal performance targets.
- Analyse why employees feel that others in the organisation would not support them if needed, and set up formal structures, including mentor-mentee relationships, to improve the support available to employees. At the firm level, consideration should be given to regular team-building activities involving all levels of staff and management.
- Work closely with younger employees to improve job satisfaction generally and to clarify how management sees their current jobs changing in the medium-to-long term. If no such plans exist, consideration should be given to developing them, and if this is impossible or impractical, employees should be informed accordingly.
- Introduce resilience training, particularly for employees, to improve levels of confidence (more so in the case of women) and adaptability.
- Organisations should consider how employees, especially women, could be encouraged to improve their perception of the worth of their job goals.

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