Measuring Relationships Between Workers and Managers and Stress and Workload in the Building and Construction Industry

Milestone 2 Report

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1.0 Summary and Overview

This report provides an overview of outcomes from the *Survey Distribution and Analysis* phase of the research project to develop a measure of supervisor influenced work environments in the Building and Construction Industry. The purpose of activities undertaken during this phase was to determine the ideal composition and language for a survey to measure the variables of interest in the building and construction industry. This phase was also used to determine the minimum number of questions that can be used to capture the variables of interests in a reliable and valid manner.

The report comprises five sections. The first section provides a detailed breakdown of the methodology and participant sample used in this study. The second section outlines a description of each measure and its relevant psychometric properties. The third and fourth sections detail the convergent and criterion validity of the proposed measure. The last section outlines group differences amongst the participants.

The outcome of this process was the development of a 36-item revised PAW survey instrument for use in the Building and Construction Industry. The 11 constructs contained in the revised PAW are:

- Role overload (4 items)
- Role ambiguity (4 items)
- Role conflict (3 items)
- Job control (3 items)
- Coworker support (3 items)
- Supervisor support (3 items)
- Supervisor task conflict (3 items)
- Supervisor relationship conflict (3 items)
- Praise and recognition (3 items)
- Procedural justice (3 items)
- Change consultation (4 items)

Each of the 11 constructs demonstrated acceptable levels of reliability, indicating that the revised items within each of the constructs were appropriately interrelated. Furthermore, both exploratory factor analysis and the single-factor congeneric models demonstrated that all items loaded appropriately on their respective latent factor, in accordance with the underlying theoretical structure of the measure. For instance, each of the four role ambiguity items loaded well onto the role ambiguity factor, rather than on the role conflict factor. The intercorrelations amongst the 11 constructs in the revised PAW were in the expected directions, in accordance with the theory underpinning the measure (i.e., demands are positively associated with one another, resources are positively associated with one another, and the association between demands and resources is in the negative direction).

Concurrent construct validity was tested by correlating the 11 revised PAW constructs with existing validated measures of theoretically similar constructs; these correlations were statistically significant, moderate to strong in magnitude, and consistent with expectations. Criterion-validity was also tested by correlating the 11 revised PAW constructs with outcomes theoretically associated with the measure. The correlations were consistent with theory and demonstrated a stronger relationship between the revised PAW constructs and outcomes more proximal to the workplace, such as job satisfaction, turnover intentions, and wellbeing, as expected.

Finally, group differences for the 11 revised PAW constructs were assessed and significant, small differences were found on some of the demographic variables.

The next suggested steps for the research include:

- further testing of the revised PAW measure on a larger, more representative sample to establish group norms for further benchmarking;
- carifying the appropriate demographic and work characteristics to establish meaningful normative data;
- develop an abbreviated checklist in conjunction with the full 36-item revised PAW for use in the Building and Construction industry; and,
- determine the feedback composition, scoring and distribution method that will result in the maximum participation at an organisational level and during survey distribution.

Contents

2.0 Method and Sample Characteristics

Survey data were collected from 11 metropolitan and regional building and construction sites throughout Queensland. A representative from Mates in Construction was present during all data collection to introduce the study, distribute the surveys and answer any questions. Participants were given the option of a paper-based survey or an online version using a QR code or URL link for access. All participants chose the paper-based survey. A small gift card prize was offered for participation. Participants were asked to provide contact details for the prize draw at the end of the survey which was separated from the survey by the participant or by the research team. All data were collected in accordance with Griffith University ethical requirements. This data collection method resulted in 406 returned surveys. This section outlines the makeup of the final sample used for the analyses.

2.1 Sample Characteristics

Location and Site Type	**Surveys Received**
Toowoomba Hospital Upgrade	18
Remote QLD Wind Farm Construction	45
Brisbane CBD High Rise Fit Out	55
Brisbane Suburbs Civil Construction	11
Brisbane Multiple Professions	6
Brisbane Residential Tower Build	24
Cairns Civil Project Road	42
Cairns Hospital Build	19
CFMEU Safety	92
Rockhampton Art Gallery Project	50
Moranbah FIFO Mine Construction	21
Miscellaneous (Identifier rendered unclear during transit)	23
Total	**406**

2.2 Gender

Gender	N	PAW%	ABS – Construction Industry Australia %[1]
Female	20	4.9%	12.1%
Male	368	90.6%	87.9%
Prefer not to say	0	0%	0%

Note: percentages do not equal 100% due to missing responses.
[1] Australian Bureau of Statistics (2019)

The majority of the sample identified as male (90.6%) with only 20 participants indicating they identified as female. The gender distribution obtained in the sample is similar to the gender distribution of employees within the Australian construction industry.

2.3 Age

	N		M (years)	SD (years)	Range (years)
	Valid	Missing			
Age	384	22	39.22	11.09	18 to 65

Age Category	N	%
15-19 years	3	1%
20-24 years	24	6%
25-29 years	57	14%
30-34 years	73	18%
35-39 years	53	13%
40-44 years	41	10%
45-49 years	50	12%
50-54 years	40	10%
55-59 years	32	8%
60-65 years	11	3%

The average age of the participants was 39.22 years, with an age range between 18 years and 65 years. The distribution of age across different age categories is presented in the table above.

2.4 Education

Level of Education	N	%
Year 10 or Under	70	17.2%
Year 12	52	12.8%
Trade Qualification	112	27.6%
Certificate	66	16.3%
Associate Diploma	3	0.7%
Diploma	31	7.6%
Undergraduate Degree	30	7.4%
Postgraduate Degree	19	4.7%
No Education Level Provided	23	5.7%

For educational attainment, most participants held a Year 10 or Under (*n* = 70) or Trade Qualification (*n* = 112).

2.5 Industry Tenure

	N		M (years)	SD (years)	Range (years)
	Valid	Missing			
Industry Tenure	384	22	17.49	11.05	0 to 45

Industry Tenure	N	%
0 – 4.9 years	42	10%
5 – 9.9 years	56	14%
10 – 14.9 years	77	19%
15 – 19.9 years	57	14%
20 – 24.9 years	52	13%
> 25 years	100	25%

The average industry tenure was 17.49 years (*SD* = 11.05 years), ranging from less than 1 year to 45 years.

2.6 Employment Status

Employment Status	N	%
Employed by the Principal Contractor	138	34%
Employed by a Subcontractor	233	57.4%
Self-Employed	9	2.2%
Other	3	0.7%

The majority of participants were employed on by a Subcontractor (n = 233) or the Principal Contractor (n = 138). Only 2.2% of the sample was reported to be Self-Employed and less than 1% of participants were employed in an 'Other' category, such as by the Client.

2.7 Role Description

Role Description	N	%
Apprentice	17	4.2%
Labourer	29	7.1%
Operator	36	8.9%
Trades-Person	145	35.7%
Leading Hand	48	11.8%
Foreman	15	3.7%
Site Manager	8	2.0%
Contract Administrator	8	2.0%
Site Engineer	4	1.0%
Project Engineer	9	2.2%
Project Manager	15	3.7%
Health and Safety	20	4.9%
Other	30	7.1%

In terms of roles and responsibilities, most participants were employed as a Trades-Person (n = 145), Leading Hand (n = 48), or an Operator (n = 36).

2.8 Direct Supervisor

Direct Supervisor	N	%
Site Manager	82	20.2%
Foreman	85	20.9%
Supervisor from my employing company	143	35.2%
Leading Hand	45	11.1%
I do not know who my direct supervisor is on this job	2	0.5%
Other (e.g., Construction Manager, Operations Manager, Project Manager, Project Director, etc)	20	4.9%

The majority of participants reported their direct supervisor to be a supervisor from their employing company (n = 143), a Foreman (n = 85) or the Site Manager (n = 82).

2.9 MATES in Construction Training

MATES Training Module	N		
	Yes	No	Did Not Respond
General Awareness Training	226	147	33
Construction Connector Training	82	244	80
Construction Assist Training	34	268	104

A total of 226 participants indicated they had participated in General Awareness Training, while 82 and 34 participants indicated they had participated in Construction Connector Training and Construction Assist Training, respectively. There is a high proportion of participants who did not respond to this question, likely leaving it blank because they had not completed the training.

3.0 Description of Measures and Psychometric Properties

Psychometric Properties and Item Reduction for each Psychosocial Risk Factor

In this section of the report, definitions, items, and details of psychometric testing will be presented for each of the 11 constructs of the revised PAW:

- Role overload
- Role ambiguity
- Role conflict
- Job control
- Coworker support
- Supervisor support
- Supervisor task conflict
- Supervisor relationship conflict
- Praise and recognition
- Procedural justice
- Change consultation

For each of the constructs, single-factor congeneric models were tested with confirmatory factor analysis (CFA). This process provides evidence that a proposed construct is unidimensional (i.e., measures only the construct it is supposed to measure), demonstrates the reliability and validity of the items and overall construct, and helps to identify any poor performing items that may be removed, resulting in a more effective and parsimonious measure. Once the best-fitting single-factor congeneric models were identified, the 11 revised PAW constructs and their associated items were incorporated in a full measurement model and again examined using confirmatory factor analysis. The purpose of including all 11 constructs and their respective items in a full measurement model is to further establish the reliability and validity of the revised PAW, demonstrating that each subscale measures an independent component of the full measure. A variety of statistics are provided to demonstrate the "fit" of each of the measurement models and, as a guide, the following criteria are used (Hu & Bentler, 1999):

- TLI and CFI should be close to .95 (although, values above .90 are acceptable)
- RMSEA values should be close to .06 (or lower)
- SRMR values should be close to .08 (or lower)

For each of the revised PAW construct, the following additional tests of validity and reliability are provided:

- Squared multiple correlations, which explains the amount of variance in the PAW construct accounted for by each of the revised items (> .40)
- Average variance explained in the PAW construct by the revised items (> 50%)
- Cronbach's alpha coefficient, which is a measure of reliability that determines how closely related items in a measure are to one another (> .70).

3.1 Role Overload

Definition

Role Overload occurs when an individual feels pressured by excessive workloads, difficult deadlines, and a general inability to fulfil organisational expectations in the time available.

Original Items

Role Overload was measured with five items designed to assess time pressure. In line with the original PAW survey (People at Work, 2016), the items were adapted from Cousins et al. (2004) with an additional item added in response to the focus groups to assess overload from pressure to perform unpaid work. The items were rated on a 7-point scale, ranging from 1 (Never) to 7 (Always).

	Never	Rarely	Once in a while	Some of the time	Fairly often	Often	Always
I am pressured to work long hours	1	2	3	4	5	6	7
I have unachievable deadlines	1	2	3	4	5	6	7
I have unrealistic time pressures	1	2	3	4	5	6	7
I have to neglect some tasks because I have too much to do	1	2	3	4	5	6	7
I am pressured to do unpaid work outside work hours	1	2	3	4	5	6	7

Confirmatory Factor Analysis and Final Items

A confirmatory factor analysis was conducted on the five items comprising Role Overload. Although the five-item model produced a good model fit, Item 5 (*I am pressured to do unpaid work outside work hours*) had a low squared multiple correlation (.266) and was subsequently removed from the measure.

The final four-item measure demonstrated improved model fit, as outlined in the table below. Internal consistency reliability for the four items was acceptable (.88) and the items explained 66% of the variance of Role Overload. The squared multiple correlations for the four items are also presented below: all are greater than .40.

Items	N	X^2	CFA Fit Indices			
			TLI	CFI	RMSEA	SRMR
All Items	406	39.23, $p < .000$	.94	.97	.130	.04
1, 2, 3, 4	406	6.33, $p = .042$	.99	.99	.07	.02

N – Number of cases with complete data

Final Items	Squared Multiple Correlations
Item 1	.516
Item 2	.749
Item 3	.894
Item 4	.471

3.2 Role Ambiguity

Definition

Role Ambiguity is defined as the lack of clarity or uncertainty with respect to job responsibilities, or the perceived lack of important job-related information. Unclear or constantly changing specifications regarding expectations and duties defining an individual's job also constitutes role ambiguity.

Original Items

Four items adapted from the original PAW survey (People at Work, 2016) and Cousins et al. (2004) were used to assess job clarity, rated on a 7-point scale, ranging from 1 (Never) to 7 (Always). All items were subsequently reverse-coded, such that higher scores indicated greater role ambiguity.

	Never	Rarely	Once in a while	Some of the time	Fairly often	Often	Always
I am clear what is expected of me on this job	1	2	3	4	5	6	7
I know how to do the tasks required to get my job done	1	2	3	4	5	6	7
I am clear what my duties and responsibilities are on this job	1	2	3	4	5	6	7
I understand how my work fits into the overall goals of this project	1	2	3	4	5	6	7

Confirmatory Factor Analysis and Final Items

A confirmatory factor analysis was conducted on the four items comprising Role Ambiguity. The four-item model produced a good model fit and squared multiple correlations were all acceptable. Internal consistency reliability for the four items was acceptable (.83) and the items explained 57% of the variance of Role Ambiguity. The squared multiple correlations for the four items are also presented below and exceed .40. No changes are recommended for this measure.

Items	N	X^2	CFA Fit Indices			
			TLI	CFI	RMSEA	SRMR
All Items	406	2.23, *p* = .329	.99	1.00	.02	.01

N – Number of cases with complete data

Final Items	Squared Multiple Correlations
Item 1	.531
Item 2	.568
Item 3	.741
Item 4	.428

3.3 Role Conflict

Definition

Role Conflict reflects the degree to which employees are expected to perform two or more mutually exclusive tasks simultaneously and has been described as incompatible demands and expectations placed on an employee, by different groups or persons with whom an individual must interact.

Original Items

Four items adapted from the original PAW survey (People at Work, 2016) and Haynes, Wall, Bolden, Stride, and Rick (1999) were used to assess role conflict, rated on a 7-point scale, ranging from 1 (Never) to 7 (Always).

	Never	Rarely	Once in a while	Some of the time	Fairly often	Often	Always
The tasks I do on this job are accepted by one person, but not by another	1	2	3	4	5	6	7
Different work groups on this site demand things from me that are difficult to do at the same time	1	2	3	4	5	6	7
Different people on this job expect conflicting things from me	1	2	3	4	5	6	7
I receive incompatible requests from two or more people on this job	1	2	3	4	5	6	7

Confirmatory Factor Analysis and Final Items

A confirmatory factor analysis was conducted on the four items comprising Role Conflict. Although the four-item model produced an adequate model fit, the modification indices indicated that the fit of the model would be improved by covarying Items 1 and 2. This usually means that two items share variance that cannot be attributed to the overall factor the items are attempting to measure. In the interests of parsimony, the lowest loading item was removed (Item 1: *The tasks I do on this job are accepted by one person, but not by another)*. As the final measure contains three-items, fit statistics were not available, but the squared multiple correlations indicated the items accurately reflected the construct of Role Conflict. Internal consistency reliability for the three items was acceptable (.89) and the three items explained 74% of the variance of Role Conflict. The squared multiple correlations for the three items are also presented below and exceed.

Items	N	X^2	CFA Fit Indices			
			TLI	CFI	RMSEA	SRMR
All Items	406	28.52, $p < .000$	.92	.97	.18	.03
2, 3, 4	406	-	-	-	-	-

N – Number of cases with complete data

Final Items	Squared Multiple Correlations
Item 2	.638
Item 3	.903
Item 4	.687

3.4 Job Control

Definition

Job Control is the degree to which an employee has the discretion to approach their work in a manner of their choosing. It reflects an employee's capacity to manage his or her activities at work, including choice of work tasks, methods of work, work pacing, work scheduling, control over resources, and control over the physical environment.

Original Items

Three items adapted from the original PAW survey (People at Work, 2016) and Cousins et al. (2004) were used to assess job control, rated on a 7-point scale, ranging from 1 (Never) to 7 (Always).

	Never	Rarely	Once in a while	Some of the time	Fairly often	Often	Always
I have a choice in deciding what I do on this job	1	2	3	4	5	6	7
I have some say over the way I get the work done on this job	1	2	3	4	5	6	7
I have a say in my own work speed on this job	1	2	3	4	5	6	7

Confirmatory Factor Analysis and Final Items

A confirmatory factor analysis was conducted on the three items comprising Job Control. As Job Control contains three-items, fit statistics were not available, but the squared multiple correlations indicated the items accurately reflected the construct of Job Control. Internal consistency reliability for the three items was acceptable (.78) and the items explained 56% of the variance of Job Control. The squared multiple correlations for the three items are also presented below: all are greater than .40. No changes are recommended for this measure.

Items	N	X^2	CFA Fit Indices			
			TLI	CFI	RMSEA	SRMR
All Items	406	-	-	-	-	-

N – Number of cases with complete data

Final Items	Squared Multiple Correlations
Item 1	.595
Item 2	.622
Item 3	.464

3.5 Co-Worker Support

Definition

Co-Worker Support can be instrumental or emotional in nature. Instrumental support refers to practical help to solve problems or tangible assistance or aid in the form of knowledge or advice needed to resolve the issue, whereas emotional support involves care or listening sympathetically to another person.

Original Items

In line with the original PAW survey (People at Work, 2016), Co-worker Support was measured with four items adapted from Cousins et al. (2004), and rated on a 7-point scale, ranging from 1 (Never) to 7 (Always).

	Never	Rarely	Once in a while	Some of the time	Fairly often	Often	Always
I can rely on my co-workers to help me out with a work problem	1	2	3	4	5	6	7
If the work gets difficult, my co-workers will help me	1	2	3	4	5	6	7
I get the help and support I need from my co-workers	1	2	3	4	5	6	7
My co-workers are willing to listen to my work-related problems	1	2	3	4	5	6	7

Confirmatory Factor Analysis and Final Items

A confirmatory factor analysis was conducted on the four items comprising Co-worker Support. Although the four-item model produced an adequate model fit, the modification indices indicated that the fit of the model would be improved by covarying Items 1 and 2. This usually means that two items share variance that cannot be attributed to the overall factor the items are attempting to measure. In the interests of parsimony, the lowest loading item was removed (Item 1: *I can rely on my co-workers to help me out with a work problem*). As the final measure contains three-items, fit statistics were not available, but the squared multiple correlations indicated the items accurately reflected the construct of Co-worker Support. Internal consistency reliability for the three items was acceptable (.94) and the items explained 84% of the variance of Co-worker Support. The squared multiple correlations for the three items are also presented below: all are greater than .40.

Items	N	X^2	CFA Fit Indices			
			TLI	CFI	RMSEA	SRMR
All Items	406	33.06, $p < .001$	.94	.98	.20	.02
2, 3, 4	406	-	-	-	-	-

N – Number of cases with complete data

Final Items	Squared Multiple Correlations
Item 2	.836
Item 3	.919
Item 4	.755

3.6 Supervisor Support

Definition

Supervisor Support consists of both 'instrumental' support and 'emotional' support. Instrumental support refers to offering practical help to solve problems or providing tangible assistance or aid in the form of knowledge or advice needed to resolve the issue, whereas emotional support involves offering care or listening sympathetically to another person.

Original Items

Four items adapted from the original PAW survey (People at Work, 2016) and Cousins et al. (2004) were used to assess Supervisor Support, rated on a 7-point scale, ranging from 1 (Never) to 7 (Always).

	Never	Rarely	Once in a while	Some of the time	Fairly often	Often	Always
I can rely on my direct supervisor on this job to help me out with a work problem	1	2	3	4	5	6	7
If the work gets difficult, my direct supervisor on this job will help me	1	2	3	4	5	6	7
I get the help and support I need from my direct supervisor on this job	1	2	3	4	5	6	7
My direct supervisor on this job is willing to listen to my work-related problems	1	2	3	4	5	6	7

Confirmatory Factor Analysis and Final Items

A confirmatory factor analysis was conducted on the four items comprising Supervisor Support. Although the four-item model produced an adequate model fit, the modification indices indicated that the fit of the model would be improved by covarying Items 1 and 2. This usually means that two items share variance that cannot be attributed to the overall factor the items are attempting to measure. Further analysis also indicated overlap in the item content. In the interests of parsimony, the lowest loading item was removed (Item 1: *I can rely on my direct supervisor on this job to help me out with a work problem*). As the final measure contains three-items, fit statistics were not available, but the squared multiple correlations indicated the items accurately reflected the construct of Supervisor Support. Internal consistency reliability for the three items was acceptable (.89) and the items explained 74% of the variance of Supervisor Support. The squared multiple correlations for the three items are also presented below: all are greater than .40.

Items	N	X^2	CFA Fit Indices			
			TLI	CFI	RMSEA	SRMR
All Items	406	70.32, $p < .001$	.83	.94	.29	.04
2, 3, 4	406	-	-	-	-	-

N – Number of cases with complete data

Final Items	Squared Multiple Correlations
Item 2	.576
Item 3	.796
Item 4	.862

3.7 Supervisor Task Conflict

Definition

Supervisor Task Conflict refers to disagreements with one's supervisor regarding the work to be undertaken. Such conflict may involve differences in views about policies and procedures, disputes regarding allocation and distribution of resources, or disagreements in judgements and interpretation of facts.

Original Items

Four items adapted from the original PAW survey (People at Work, 2016) and Jehn, Greer, Levine, and Szulanski (2008) were used to assess supervisor task conflict, rated on a 7-point scale, ranging from 1 (Never) to 7 (Always).

	Never	Rarely	Once in a while	Some of the time	Fairly often	Often	Always
I disagree with my direct supervisor on this site about the work being done	1	2	3	4	5	6	7
There are conflicts about ideas between me and my direct supervisor on this site	1	2	3	4	5	6	7
I have conflict with my direct supervisor on this site about the work I do	1	2	3	4	5	6	7
There are differences of opinion between me and my direct supervisor on this site	1	2	3	4	5	6	7

Confirmatory Factor Analysis and Final Items

A confirmatory factor analysis was conducted on the four items comprising Supervisor Task Conflict. Although the four-item model produced an adequate model fit, the modification indices indicated that the fit of the model would be improved by covarying Items 1 and 2. This usually means that two items share variance that cannot be attributed to the overall factor the items are attempting to measure. Further analysis also indicated overlap in the item content. In the interests of parsimony, the lowest loading item was removed (Item 1: *I disagree with my direct supervisor on this site about the* work *being done*). As the final measure contains three-items, fit statistics were not available, but the squared multiple correlations indicated the items accurately reflected the construct of Supervisor Task Conflict. Internal consistency reliability for the three items was acceptable (.83) and the items explained 63% of the variance of Supervisor Task Conflict. The squared multiple correlations for the three items are also presented below: all are greater than .40.

Items	N	X^2	CFA Fit Indices			
			TLI	CFI	RMSEA	SRMR
All Items	406	69.56, p <.001	.74	.91	.289	.06
2, 3, 4	406	-	-	-	-	-

N – Number of cases with complete data

Final Items	Squared Multiple Correlations
Item 2	.418
Item 3	.758
Item 4	.712

3.8 Supervisor Relationship Conflict

Definition

Supervisor *Relationship* Conflict refers to interpersonal disagreements and frictions with one's supervisor arising from differences in personal style, values, and norms.

Original Items

Four items adapted from the original PAW survey (People at Work, 2016) and Jehn et al. (2008) were used to *assess* supervisor relationship conflict, rated on a 7-point scale, ranging from 1 (Never) to 7 (Always).

	Never	Rarely	Once in a while	Some of the time	Fairly often	Often	Always
There are bad feelings between me and my direct supervisor on this site	1	2	3	4	5	6	7
There are personality conflicts evident between me and my direct supervisor on this site	1	2	3	4	5	6	7
There is tension between me and my direct supervisor on this site	1	2	3	4	5	6	7
There is emotional conflict between me and my direct supervisor on this site	1	2	3	4	5	6	7

Confirmatory Factor Analysis and Final Items

A confirmatory factor analysis was conducted on the four items comprising Supervisor Relationship *Conflict*. Although the four-item model produced an adequate model fit, the modification indices indicated that the fit of the model would be improved by covarying Items 3 and 4. This usually means that two items share variance that cannot be attributed to the overall factor the items are attempting to measure. In the interests of parsimony, the lowest loading item was removed (Item 3: *There is tension between me and my direct supervisor on this site*). As the final measure contains three-items, fit statistics were not available, but the squared multiple correlations indicated the items accurately reflected the construct of Supervisor Relationship Conflict. Internal consistency reliability for the three items was acceptable (.92) and the items explained 79% of the variance of Supervisor Relationship Conflict. The squared multiple correlations for the three items are also presented below: all are greater than .40.

Items	N	X^2	CFA Fit Indices			
			TLI	CFI	RMSEA	SRMR
All Items	406	36.55, $p < .001$	.92	.97	.207	.03
1, 2, 4	406	-	-	-	-	-

N – Number of cases with complete data

Final Items	Squared Multiple Correlations
Item 1	.750
Item 2	.952
Item 4	.677

3.9 Praise and Recognition

Definition

Praise and Recognition refers to an employee's feelings of self-worth that grow from the perception that the organisation and the people they work for value them and what they have to offer. Praise and recognition from supervisors can be in the form of encouragement, compliments, and other gestures of appreciation.

Original Items

Three items adapted from the original PAW survey (People at Work, 2016) and Siegrist et al. (2004) were used to assess praise and recognition, rated on a 7-point scale, ranging from 1 (Never) to 7 (Always).

	Never	Rarely	Once in a while	Some of the time	Fairly often	Often	Always
I feel that my direct supervisor on this job values my contributions to this organisation	1	2	3	4	5	6	7
My direct supervisor on this job gives me sufficient credit for my hard work	1	2	3	4	5	6	7
My direct supervisor on this job encourages me in my work with praise and thanks	1	2	3	4	5	6	7

Confirmatory Factor Analysis and Final Items

A confirmatory factor analysis was conducted on the three items comprising Praise and Recognition. As Praise and Recognition contains three-items, fit statistics were not available, but the squared multiple correlations indicated the items accurately reflected the construct of Praise and Recognition. Internal consistency reliability for the three items was acceptable (.91) and the items explained 78% of the variance of Praise and Recognition. The squared multiple correlations for the three items are also presented below: all are greater than .40. No changes are recommended for this measure.

Items	N	X^2	CFA Fit Indices			
			TLI	CFI	RMSEA	SRMR
All Items	406	-	-	-	-	-

N – Number of cases with complete data

Final Items	Squared Multiple Correlations
Item 1	.792
Item 2	.716
Item 3	.844

3.10 Procedural Justice

Definition

Procedural Justice refers to employees' perceptions of the fairness of the formal policies, procedures, and processes used to arrive at decisions and achieve end-goals and other outcomes.

Original Items

Four items adapted from the original PAW survey (People at Work, 2016) and Dietz, Robinson, Folger, Baron, and Schulz (2003) were used to assess praise and recognition, rated on a 7-point scale, ranging from 1 (Never) to 7 (Always).

	Never	Rarely	Once in a while	Some of the time	Fairly often	Often	Always
Supervisors consistently follow the policies and procedures set out for this site	1	2	3	4	5	6	7
My direct supervisor on this job often make staffing decisions based on favoritism	1	2	3	4	5	6	7
My direct supervisor on this job takes employee interests into account when making important decisions	1	2	3	4	5	6	7
My direct supervisor on this job treats employees with respect and dignity as individuals	1	2	3	4	5	6	7

Confirmatory Factor Analysis and Final Items

A confirmatory factor analysis was conducted on the four items comprising Procedural Justice. The four-item solution produced good fit statistics. However, Item 2 (*My direct supervisor on this job often make staffing decisions based on favouritism*) had a low square multiple correlation (.344), which is likely due to it being an item requiring reverse scoring. In the interests of parsimony, Item 2 was removed from the measure. As the final measure contains three-items, fit statistics were not available, but the squared multiple correlations indicated the items accurately reflected the construct of Procedural Justice. Internal consistency reliability for the three items was acceptable (.80) and the items explained 58% of the variance of Procedural Justice. The squared multiple correlations for the three items are also presented below: all are greater than .40.

Items	N	X^2	CFA Fit Indices			
			TLI	CFI	RMSEA	SRMR
All Items	406	.06, *p* = .970	1.00	1.00	.000	.002
1, 3, 4	406	-	-	-	-	-

N – Number of cases with complete data

Items	Squared Multiple Correlations
Item 1	.609
Item 3	.488
Item 4	.654

3.11 Change Consultation

Definition

Change Consultation refers to the degree to which employees are provided with information about organisational changes and provided the opportunity to participate in decisions that may affect their work.

Original Items

Four items adapted from the original PAW survey (People at Work, 2016), Cousins et al. (2004), and Jimmieson, Peach, and White (2008) were used to assess praise and recognition, rated on a 7-point scale, ranging from 1 (Never) to 7 (Always).

	Never	Rarely	Once in a while	Some of the time	Fairly often	Often	Always
I am consulted about proposed changes on this job	1	2	3	4	5	6	7
When changes are made on this job, I am clear about how they will work out in practice	1	2	3	4	5	6	7
I am clearly informed about the nature of the changes that take place in my workgroup	1	2	3	4	5	6	7
I can voice concerns about changes that affect my job	1	2	3	4	5	6	7

Confirmatory Factor Analysis and Final Items

A confirmatory factor analysis was conducted on the four items comprising Change Consultation. The four-item model produced a good model fit and squared multiple correlations were all acceptable. Internal consistency reliability for the four items was also acceptable (.89) and the items explained 69% of the variance of Change Consultation. The squared multiple correlations for the four items are also presented below: all are greater than .40. No changes are recommended for this measure.

Items	N	X^2	CFA Fit Indices			
			TLI	CFI	RMSEA	SRMR
All Items	406	2.58, p = .276	1.00	1.00	.027	.01

N – Number of cases with complete data

Final Items	Squared Multiple Correlations
Item 1	.542
Item 2	.811
Item 3	.877
Item 4	.518

3.12 Correlations and Confirmatory Factor Analysis for Full Revised PAW

The one-factor congeneric models tested in the analyses indicated all items adequately measured the constructs represented in the revised PAW measure. That is, all items within the one-factor model were highly correlated with one another and loaded on a single factor. The next step in assessing the reliability and validity of the revised PAW is to combine all the one-factor congeneric models into a full measurement model to demonstrate that the factor structure of the one-factor congeneric models is retained when all constructs are combined in a single model. In addition, the intercorrelations between the revised PAW constructs are presented below to further demonstrate the revised PAW constructs are related but independent from one another (i.e., are not simply measuring the same thing). The results from the confirmatory factor analysis of the full measurement model indicate the model has good fit; intercorrelations are presented in the table below. Correlations were generally moderate and consistent with the theory underpinning the model: demands were positively associated with one another; resources were positively associated with one another; and, negative associations occurred between demands and resources. Although some correlations were high (close to .80), the previously conducted CFA on the full measurement model supports them being independent constructs, consistent with the underlying measurement theory.

Items	N	X^2	CFA Fit Indices			
			TLI	CFI	RMSEA	SRMR
All Items	406	1227.85, p < .001	.93	.94	.06	.06

Table 3.1 – Intercorrelations Among Demands and Resources

	1	2	3	4	5	6	7	8	9	10	11	M	SD
1. Role Overload	(.88)											3.45	1.38
2. Role Ambiguity	.19***	(.83)										1.76	0.75
3. Role Conflict	.45***	.20***	(.89)									3.15	1.52
4. Job Control	-.17***	-.42***	.04	(.78)								4.68	1.39
5. Co-Worker Support	-.29***	-.42***	-.35***	.38***	(.94)							5.76	1.24
6. Supervisor Support	-.36***	-.43***	-.42***	.28***	.58***	(.89)						5.37	1.50
7. Supervisor Task Conflict	.41***	.19***	.52***	-.10*	-.35***	-.61***	(.83)					2.48	1.23
8. Supervisor Relationship Conflict	.32***	.23***	.46***	-.16***	-.37***	-.65***	.82***	(.92)				1.86	1.18
9. Praise & Recognition	-.36***	-.41***	-.38***	.28***	.49***	.83***	-.57***	-.60***	(.91)			4.88	1.66
10. Procedural Justice	-.40***	-.47***	-.37***	.35***	.54***	.77***	-.60***	-.61***	.71***	(.80)		5.40	1.24
11. Change Consultation	-.35***	-.50***	-.21***	.48***	.47***	.57***	-.36***	-.39***	.57***	.67***	(.89)	5.21	1.31

Reliability coefficients are in parentheses along the diagonal.
* $p < .05$, ** $p < .01$, ***$p < .001$

4.0 Convergent Construct Validity

This section of the report further demonstrates that the revised PAW adequately captures the organisational phenomena it intends to assess, by examining its convergent validity. To establish the convergent validity, the PAW subscales were correlated with existing validated measures of the same or similar constructs. The items and Cronbach's alpha internal consistency coefficients are presented in this section. The majority of the comparative measures were taken from the third version of the Copenhagen Psychosocial Questionnaire (COPSOQ III - Burr et al., 2019), a risk-assessment tool assessing various psychosocial risks arising from work. Additional measures of task and relationship conflict (Jehn, 1995) and procedural justice (Colquitt, 2001) were also included.

4.1 COPSOQ III Measures

Role Clarity

Each item was rated on a 5-point scale, ranging from 100 (to a very large extent) to 0 (to a very small extent). Cronbach's (1951) alpha coefficient for internal consistency was acceptable (α = .82).

	To a very large extent	To a large extent	Somewhat	To a small extent	To a very small extent
Does your work have clear objectives?	100	75	50	25	0
Do you know exactly which areas are your responsibility?	100	75	50	25	0
Do you know exactly what is expected of you at work?	100	75	50	25	0

Role Conflicts

Each item was rated on a 5-point scale, ranging from 100 (to a very large extent) to 0 (to a very small extent). Cronbach's (1951) alpha coefficient for internal consistency was acceptable (α = .65).

	To a very large extent	To a large extent	Somewhat	To a small extent	To a very small extent
Are contradictory demands placed on you at work?	100	75	50	25	0
Do you sometimes have to do things which ought to have been done in a different way?	100	75	50	25	0

Predictability

Each item was rated on a 5-point scale, ranging from 100 (to a very large extent) to 0 (to a very small extent). Cronbach's (1951) alpha coefficient for internal consistency was acceptable (α = .76).

	To a very large extent	To a large extent	Somewhat	To a small extent	To a very small extent
At your place of work, are you informed well in advance concerning for example important decisions, changes or plans for the future?	100	75	50	25	0
Do you receive all the information you need in order to do your work well?	100	75	50	25	0

Recognition

Each item was rated on a 5-point scale, ranging from 100 (to a very large extent) to 0 (to a very small extent). Cronbach's (1951) alpha coefficient for internal consistency was acceptable (α = .89).

	To a very large extent	To a large extent	Somewhat	To a small extent	To a very small extent
Is your work recognized and appreciated by the management?	100	75	50	25	0
Does the management at your workplace respect you?	100	75	50	25	0
Are you treated fairly at your workplace?	100	75	50	25	0

Social Support from Supervisor

Each item was rated on a 5-point scale, ranging from 100 (always) to 0 (never/hardly ever). Cronbach's (1951) alpha coefficient for internal consistency was acceptable (α = .84).

	Always	Often	Sometimes	Seldom	Never/hardly ever
How often is your immediate superior willing to listen to your problems at work, if needed?	100	75	50	25	0
How often do you get help and support from your immediate superior, if needed?	100	75	50	25	0
How often does your immediate superior talk with you about how well you carry out your work?	100	75	50	25	0

Influence at Work

Each item was rated on a 5-point scale, ranging from 100 (always) to 0 (never/hardly ever). Cronbach's (1951) alpha coefficient for internal consistency was acceptable (α = .88).

	Always	Often	Sometimes	Seldom	Never/hardly ever
Do you have a large degree of influence on the decisions concerning your work?	100	75	50	25	0
Do you have a say in choosing who you work with?	100	75	50	25	0
Can you influence the amount of work assigned to you?	100	75	50	25	0
Do you have any influence on what you do at work?	100	75	50	25	0
Can you influence how quickly you work?	100	75	50	25	0
Do you have any influence on HOW you do your work?	100	75	50	25	0

4.2 Additional Comparison Measures

Supervisor Relationship Conflict (Jehn et al., 2008)

Each item was rated on a 5-point scale, ranging from 1 (none) to 5 (a lot). Cronbach's (1951) alpha coefficient for internal consistency was acceptable (α = .95)

	None	A little	A moderate amount	Quite a bit	A lot
How much friction is there between you and your supervisor?	1	2	3	4	5
How much are personality conflicts evident between you and your supervisor?	1	2	3	4	5
How much tension is there between you and your supervisor?	1	2	3	4	5
How much emotional conflict is there between you and your supervisor?	1	2	3	4	5

Supervisor Task Conflict (Jehn et al., 2008)

Each item was rated on a 5-point scale, ranging from 1 (none) to 5 (a lot). Cronbach's (1951) alpha coefficient for internal consistency was acceptable (α = .96).

	None	A little	A moderate amount	Quite a bit	A lot
How often do you and your supervisor disagree about opinions regarding the	1	2	3	4	5
How frequently are there conflicts about ideas between you and your	1	2	3	4	5
How much conflict about the work you do is there between you and your	1	2	3	4	5
To what extent are there differences of opinion between you and your	1	2	3	4	5

Procedural Justice (Colquitt, 2001)

Each item was rated on a 5-point scale, ranging from 1 (to a very small extent) to 5 (to a very large extent). Cronbach's (1951) alpha coefficient for internal consistency was acceptable (α = .92).

	To a very small extent	To a small extent	To a moderate extent	To a large extent	To a very large extent
Have you been able to express your views and feelings during those procedures?	1	2	3	4	5
Have you had influence over the response to conflict arrived at by those procedures?	1	2	3	4	5
Have those procedures been applied consistently?	1	2	3	4	5
Have those procedures been free of bias?	1	2	3	4	5
Have those procedures been based on accurate information?	1	2	3	4	5
Have you been able to appeal the response to conflict arrived at by those procedures?	1	2	3	4	5
Have those procedures upheld ethical and moral standards?	1	2	3	4	5

4.3 Correlations

To assess convergent construct validity, the revised PAW measures were compared to existing, validated measures of theoretically similar constructs. All correlations were consistent with theory and in line with expectations. Correlations between the revised PAW constructs and theoretically similar established constructs were moderate to high, as expected

Table 4.1 – Correlations Among Job Demands and Equivalent Measures

Job Demands	Role Clarity[a]	Role Conflicts[a]	Supervisor Task Conflict[b]	Supervisor Relationship Conflict[b]
Role Overload	-.30***	.36***	.36***	.32***
Role Ambiguity	-.59***	.17*	.18*	.20**
Role Conflict	-.35***	.38***	.47***	.40***
Supervisor Task Conflict	-.19*	.46***	.78***	.76***
Supervisor Relationship Conflict	-.24***	.44***	.81***	.85***

[a] = COPSOQIII – Burr et al. (2019); [b] = Adapted from Jehn (1995) to fit subordinate/supervisor relationship, following Graham, Dust, and Ziegert (2018).
* $p < .05$, ** $p < .01$, ***$p < .001$

Table 4.2 –Correlations Among Job Resources and Equivalent Measures

Job Resources	Influence at work[a]	Social support from supervisor[a]	Recognition[a]	Predictability[a]	Procedural Justice[c]
Job Control	.58***	.36***	.33***	.41***	.52***
Supervisor Support	.37***	.74***	.63***	.53***	.39***
Co-worker Support	.30***	.47***	.33***	.40***	.39***
Praise & Recognition	.42***	.71***	.65***	.47***	.37***
Procedural Justice	.45***	.70***	.63***	.57***	.47***
Change Consultation	.57***	.62***	.55***	.66***	.57***

[a] = COPSOQIII – Burr et al. (2019); [c] = Colquitt (2001)
* $p < .05$, ** $p < .01$, $p < .001$

5.0 Criterion Validity

This section of the report further demonstrates that the revised PAW adequately captures the organisational phenomena it intends to assess, by examining its concurrent criterion validity. To establish the concurrent criterion validity, the PAW subscales were correlated with existing validated measures of outcome variables the revised PAW survey is theoretically expected to be associated with. The items and Cronbach's alpha internal consistency coefficients are presented in this section.

5.1 Employee Outcome Measures

Job Satisfaction

Job satisfaction is the extent to which employees enjoy their job (Warr, 1991). In line with the original PAW survey (People at Work, 2016), Job Satisfaction was measured with three items adapted from Warr (1991). Items were designed to assess employees' global level of satisfaction with their job and were rated on a 7-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Cronbach's (1951) alpha coefficient for internal consistency was acceptable (α = .94).

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I enjoy my job	1	2	3	4	5	6	7
I am satisfied with my job	1	2	3	4	5	6	7
I am happy with my job	1	2	3	4	5	6	7

Musculoskeletal Problems

Musculoskeletal problems are the self-reported pain and discomfort experienced by employees in the neck, shoulders, wrists/hands, upper back, or lower back areas (Kuorinka et al., 1987). In line with the original PAW survey (People at Work, 2016), Musculoskeletal problems over the past four weeks was measured with five items developed by Kuorinka et al. (1987) and rated on a 7-point scale, ranging from 1 (never) to 7 (always). Cronbach's (1951) alpha coefficient for internal consistency was acceptable (α = .89).

	Never	Rarely	Once in a while	Some of the time	Fairly often	Often	Always
Neck?	1	2	3	4	5	6	7
Shoulders?	1	2	3	4	5	6	7
Lost sleep over worry?	1	2	3	4	5	6	7
Wrist/hands?	1	2	3	4	5	6	7
Upper back?	1	2	3	4	5	6	7
Lower back?	1	2	3	4	5	6	7

Psychological Well-Being

Psychological well-being is a measure of normal psychological functioning and adjustment. It assesses the degree of distressing symptoms and psychiatric disorders in individuals in community settings (Goldberg, 1972; Goldberg & Williams, 1988; Shevlin & Adamson, 2005). In line with the original PAW survey (People at Work, 2016), Psychological Well-Being over the past four weeks was measured with the 12-item version of the General Health Questionnaire (Goldberg, 1972). Each item was rated on a 7-point scale, ranging from 1 (never) to 7 (always). Cronbach's (1951) alpha coefficient for internal consistency was acceptable ($\alpha = .87$).

	Never	Rarely	Once in a while	Some of the time	Fairly often	Often	Always
Felt capable of making decisions about things?	1	2	3	4	5	6	7
Felt constantly under strain?	1	2	3	4	5	6	7
Lost sleep over worry?	1	2	3	4	5	6	7
Felt able to concentrate?	1	2	3	4	5	6	7
Been able to enjoy your normal day-to-day activities?	1	2	3	4	5	6	7
Felt you play a useful part in things?	1	2	3	4	5	6	7
Been able to face up to problems?	1	2	3	4	5	6	7
Been feeling reasonably happy, all things considered?	1	2	3	4	5	6	7
Felt you couldn't overcome your difficulties?	1	2	3	4	5	6	7
Been feeling unhappy or depressed?	1	2	3	4	5	6	7
Been losing confidence in your self?	1	2	3	4	5	6	7
Been thinking of yourself as worthless?	1	2	3	4	5	6	7

Sleep Problems

Sleep problems include difficulty in falling asleep, remaining asleep, disturbing dreams, or other disturbances to normal sleep patterns (Schat, Kelloway, & Desmarais, 2005). In line with the original PAW survey (People at Work, 2016), Sleep Problems over the past four weeks was measured with four items from the Physical Health Questionnaire developed by Schat et al. (2005) and rated on a 7-point scale, ranging from 1 (never) to 7 (always). Cronbach's (1951) alpha coefficient for internal consistency was acceptable (α = .76).

	Never	Rarely	Once in a while	Some of the time	Fairly often	Often	Always
Have you had difficulty getting to sleep at night?	1	2	3	4	5	6	7
Have you woken up during the night?	1	2	3	4	5	6	7
Have you had nightmares or disturbing dreams?	1	2	3	4	5	6	7
Has your sleep been peaceful and undisturbed?	1	2	3	4	5	6	7

Headaches

The frequency and intensity of headaches can brought about by stressful events or external pressures. In line with the original PAW survey (People at Work, 2016), Headaches over the past four weeks was measured with three items from the Physical Health Questionnaire (Schat et al., 2005) and rated on a 7-point scale, ranging from 1 (never) to 7 (always). Cronbach's (1951) alpha coefficient for internal consistency was acceptable (α = .88).

	Never	Rarely	Once in a while	Some of the time	Fairly often	Often	Always
Have you experienced headaches?	1	2	3	4	5	6	7
Did you get a headache when there was pressure on you to get things done?	1	2	3	4	5	6	7
Did you get a headache when you were frustrated because things were not going the way they should have or	1	2	3	4	5	6	7

Cardiovascular Problems

In line with the original PAW survey (People at Work, 2016), Cardiovascular Problems over the past four weeks was measured with eight items adapted from the hypersensitivity scale developed by Kessler et al. (2002) and rated on a 7-point scale, ranging from 1 (never) to 7 (always). Cronbach's (1951) alpha coefficient for internal consistency was acceptable (α = .89).

	Never	Rarely	Once in a while	Some of the time	Fairly often	Often	Always
Did your heart pound or race without exercising?	1	2	3	4	5	6	7
Did your mouth feel dry?	1	2	3	4	5	6	7
Did you experience aches and pains in the chest?	1	2	3	4	5	6	7
Did you feel short of breath without exercising?	1	2	3	4	5	6	7
Did you have trouble swallowing?	1	2	3	4	5	6	7
Did your hands feel sweaty and clammy?	1	2	3	4	5	6	7
Did you feel dizzy?	1	2	3	4	5	6	7
Did your face feel hot and flushed?	1	2	3	4	5	6	7

Gastrointestinal Problems

Gastrointestinal problems include symptoms such as an upset stomach, indigestion, nausea, constipation, or diarrhoea (Schat et al., 2005). In line with the original PAW survey (People at Work, 2016), Gastrointestinal problems over the past four weeks was measured with four items from the Physical Health Questionnaire (Schat et al., 2005) and rated on a 7-point scale, ranging from 1 (never) to 7 (always). Cronbach's (1951) alpha coefficient for internal consistency was acceptable ($\alpha = .83$).

	Never	Rarely	Once in a while	Some of the time	Fairly often	Often	Always
Have you suffered from an upset stomach (indigestion)?	1	2	3	4	5	6	7
Did you have to watch that you ate carefully to avoid stomach upsets?	1	2	3	4	5	6	7
Did you feel nauseated ("sick to your stomach")?	1	2	3	4	5	6	7
Were you constipated or did you suffer from diarrhoea?	1	2	3	4	5	6	7

Emotional Well-Being

Emotional well-being is a specific dimension of subjective well-being that consists of perceptions of avowed happiness and satisfaction with life, and the balancing of positive and negative affects (Keyes, 2005). Each item was rated on a 6-point scale, ranging from 1 (never) to 6 (every day). Cronbach's (1951) alpha coefficient for internal consistency was acceptable (α = .89).

	Never	Once or twice	About once a week	About 2 or 3 times a week	Almost every day	Every day
Happy	1	2	3	4	5	6
Interested in life	1	2	3	4	5	6
Satisfied with life	1	2	3	4	5	6

Perceived Employment Opportunities

Perceived employment opportunities is a measure designed in this study to capture a participants subjective feelings on available jobs in the employment market. One item was rated on a 5-point scale, ranging from 1 (there are no suitable jobs) to 5 (there are a great deal of suitable jobs).

	There are no suitable jobs	There are very few suitable jobs	There are some suitable jobs	There are quite a few suitable jobs	There are a great deal of suitable jobs
In your opinion, how many jobs are available in the job market that would be suitable to you?	1	2	3	4	5

Turnover Intention

Turnover intention is defined as one's behavioral attitude to withdraw from the organization (Vandenberg & Nelson, 1999). One item was rated on a 5-point scale, ranging from 1 (0-20%) to 5 (81-100%).

	0-20%	21-40%	41-60%	61-80%	81-100%
What is the probability that you will leave this organization for another organization in the next 12 months?	1	2	3	4	5

5.2 Control Measures

Negative Affect

Negative affect is defined as an individual's disposition to experience discomfort across time and situations (Agho, Price, & Mueller, 1992; Watson & Clark, 1984). It was included as a control variable for intercorrelations, to control for an individual's general tendency to perceive and experience negative affective states. Eleven items were rated on a True/False scale. Cronbach's (1951) alpha coefficient for internal consistency was acceptable (α = .85).

	True	False
I often find myself worrying about something	1	0
My feelings are hurt rather easily	1	0
Often I get irritated at little annoyances	1	0
I suffer from nervousness	1	0
My mood often goes up and down	1	0
I sometimes feel just miserable for no good reason	1	0
I am easily startled by things that happen unexpectedly	1	0
I often lose sleep over my worries	1	0
Minor setbacks sometimes irritate me too much	1	0
There are days when I'm on edge all of the time	1	0
I am too sensitive for my own good	1	0

5.3 Semi-Partial Correlations

Each of the revised PAW constructs were correlated with the established outcome variables. In line with theory, it is expected that the facets of PAW assessing demands will be positively associated with health problems (e.g., headaches) and turnover intentions and negatively associated with job satisfaction, psychological wellbeing, and emotional wellbeing. In contrast, it is expected that the facets of PAW assessing resources will be negatively associated with health problems (e.g., headaches) and turnover intentions and positively associated with job satisfaction, psychological wellbeing, and emotional wellbeing.

The potential confounding effect of negative affectivity was also controlled for in the correlation analysis. Negative affectivity refers to individual differences in the tendency to perceive and experience negative affect, whereby people with high levels of negative affect are more likely to perceive negative events, experience negative emotions, and possess a more negative view of themselves (Watson & Clark, 1984). Negative affectivity was assessed with an 11-item measure in which participants responded with either 1 = true or 0 = false (Agho et al., 1992). The negative affectivity measure had an acceptable level of internal consistency (α = .85).

Table 5.1 – Semi-Partial Correlations Among Job Demands and Employee Outcomes

Job Demands	Job Satisfaction	Psychological Wellbeing	Musculoskeletal Problems	Cardiovascular Problems	Sleep Problems	Headaches	Gastrointestinal Problems	Emotional Wellbeing	Perceived Employment Opportunities	Turnover Intention
Role Overload	-.21**	-.49***	.25***	.16*	.19*	.31***	.16*	-.01	-.14	.17*
Role Ambiguity	-.35***	-.41***	.02	.19**	.15*	.14	.21**	-.26***	-.09	.20**
Role Conflict	.02	-.25***	.26***	.22**	.08	.29***	.26***	.09	-.28***	.11
Supervisor Task Conflict	.05	-.35***	.02	.19**	.06	.13	.16*	.01	-.30***	.02
Supervisor Relationship Conflict	-.07	-.42***	.03	.20**	.12	.08	.14	-.06	-.32***	.08

* $p < .05$, ** $p < .01$, $p < .001$

Table 5.2 – Semi-Partial Correlations Among Job Resources and Employee Outcomes

Job Resources	Job Satisfaction	Psychological Wellbeing	Musculoskeletal Problems	Cardiovascular Problems	Sleep Problems	Headaches	Gastrointestinal Problems	Emotional Wellbeing	Perceived Employment Opportunities	Turnover Intention
Job Control	.41 ***	.42 ***	-.07	-.08	-.05	-.06	-.01	.32 ***	.02	-.07
Supervisor Support	.18 *	.50 ***	.03	-.16 *	-.15*	-.05	-.07	.17*	.22**	-.16*
Co-Worker Support	.18*	.41***	-.08	-.15*	-.06	-.12	-.13	.26***	.02	-.17*
Praise & Recognition	.16*	.41***	.04	-.11	-.14	-.00	-.01	.17*	.31***	-.14
Procedural Justice	.28***	.62***	-.07	-.24***	-.20**	-.15*	-.14	.31***	.33***	-.18*
Change Consultation	.38***	.55***	-.06	-.17*	-.24***	-.06	-.09	.26***	.19**	-.24***

* $p < .05$, ** $p < .01$, $p < .001$

5.4 Summary of Findings for Semi-Partial Correlations

In general, the associations between the revised PAW constructs and outcome measures were as expected and in line with relevant theory. Outcome variables more proximal to the workplace (e.g., job satisfaction and psychological wellbeing) had stronger associations with PAW constructs. Physical health problems and turnover intentions had smaller associations with the PAW constructs; this is expected given that factors affecting these outcomes are not limited to the work environment. Nonetheless, the actual direction of the associations was consistent with theory. In general, the correlation findings demonstrate that:

- Higher levels of role overload were associated with higher levels of musculoskeletal problems, cardiovascular problems, sleep problems, headaches, gastrointestinal problems and turnover intentions. Furthermore, higher levels of role overload were associated with reduced job satisfaction and psychological wellbeing.
- Higher levels of role ambiguity were associated with higher levels of cardiovascular problems, sleep problems, gastrointestinal problems and turnover intentions. In addition, higher levels of role ambiguity were associated with reduced job satisfaction, emotional wellbeing, and psychological wellbeing.
- Higher levels of role conflict were associated with higher levels of musculoskeletal problems, cardiovascular problems, headaches, and gastrointestinal problems. Additionally, higher levels of role conflict were associated with reduced psychological wellbeing.
- Higher levels of supervisor task and relationship conflict were associated with higher levels of cardiovascular problems and gastrointestinal problems (task conflict only) and reduced levels of psychological wellbeing.
- Higher levels of job control, supervisor support, co-worker support, praise and recognition, procedural justice, and change consultation were related to higher levels of job satisfaction, psychological wellbeing, and emotional wellbeing.
- A greater incidence of cardiovascular problems were associated with lower supervisor support, co-worker support, procedural justice, and change consultation.
- None of the resource variables were significantly associated with musculoskeletal and gastrointestinal problems.
- Higher levels of turnover intentions and cardiovascular problems were associated with lower co-worker support, supervisor support, procedural justice, and change consultation.
- Higher levels of sleep problems were reported by employees with lower levels of supervisor support, procedural justice, and change consultation.
- Higher levels of headaches were associated with reduced levels of change consultation.

6.0 Group Differences

Statistical analyses on each of the 11 revised PAW constructs to ascertain whether significant difference occurred for any of the key demographics variables collected in the survey. Correlations were conducted for age and years of experience in the industry. Multivariate analysis of variance (MANOVA) was conducted for the remaining demographic variables. The results are presented below.

6.1 Age and Years in Building Industry

The only significant findings for age and years in the building industry were that role overload was greater, and role ambiguity lower, for those with more years of experience.

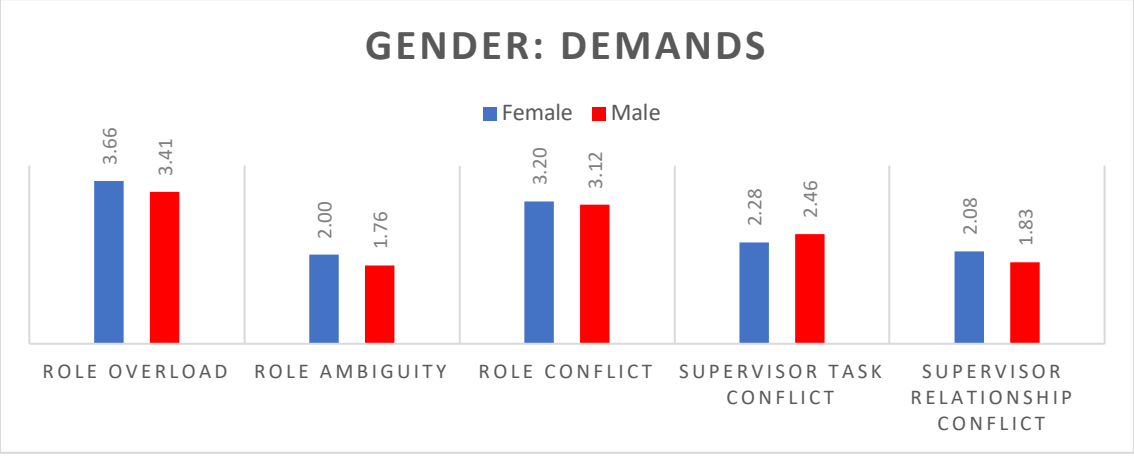
Job Demands	Role Overload	Role Ambiguity	Role Conflict	Supervisor Task Conflict	Supervisor Relationship Conflict
Age	.09	-.10	.06	.00	.01
Years in Building Industry	.11*	-.15**	.03	.00	.00

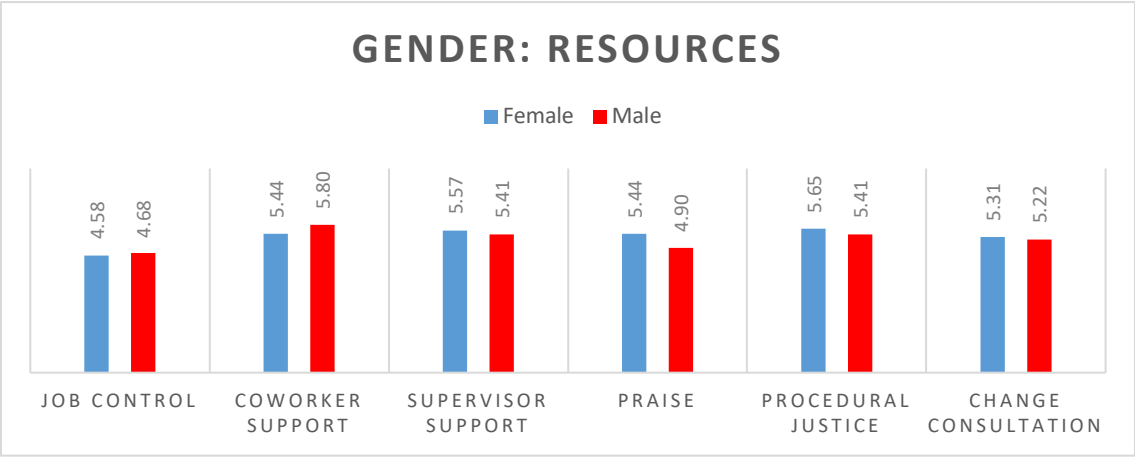
* $p < .05$, ** $p < .01$, $p < .001$

Job Resources	Job Control	Co-worker Support	Supervisor Support	Praise	Procedural Justice	Change Consultation
Age	.06	-.03	-.05	-.08	-.05	.01
Years in Building Industry	.07	.01	-.01	-.05	-.03	.01

6.2 Gender

No significant differences were observed for gender.



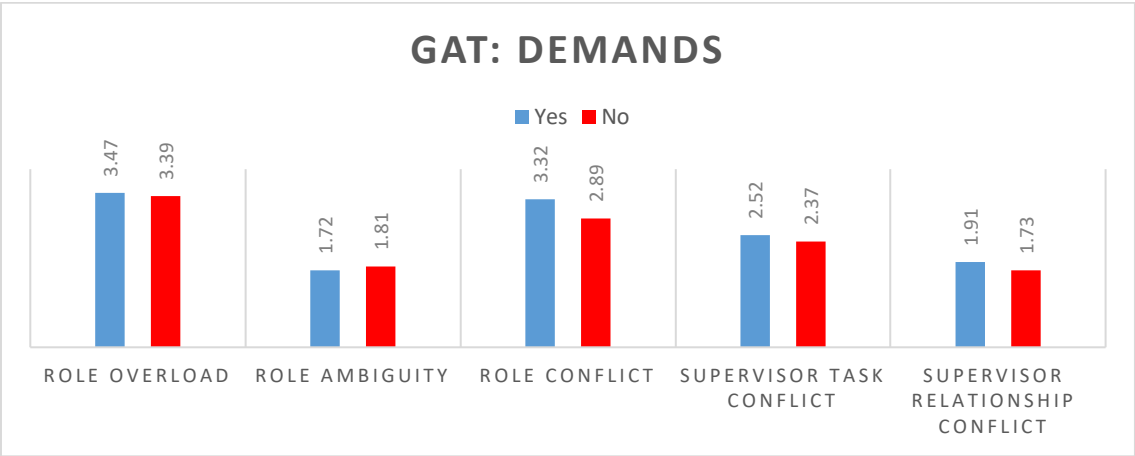


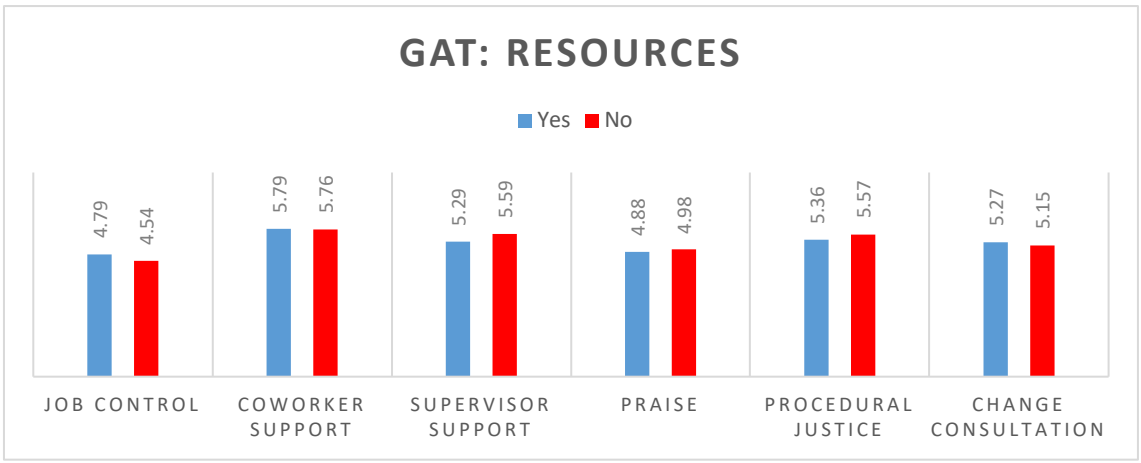
6.3 Training

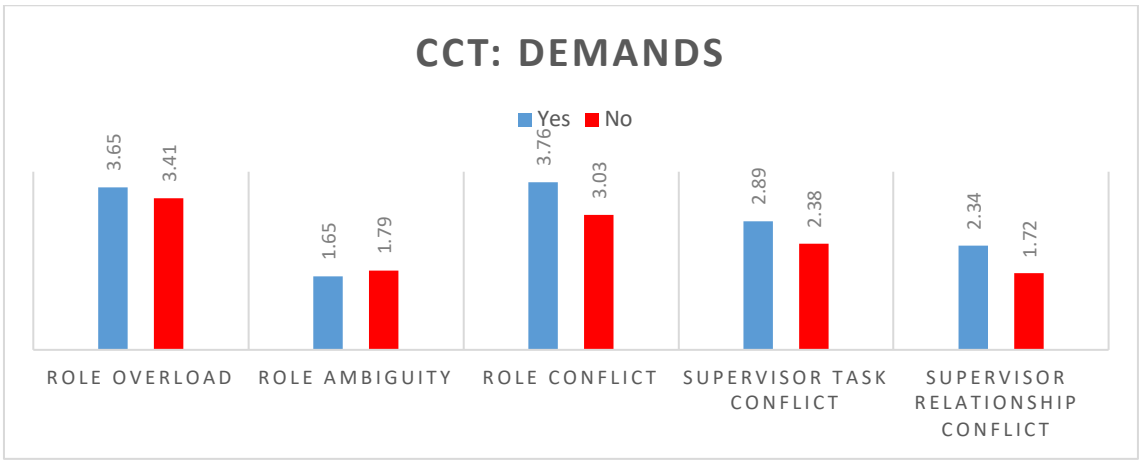
Some small significant differences were found relating to participant's experience with MATES in Construction training:

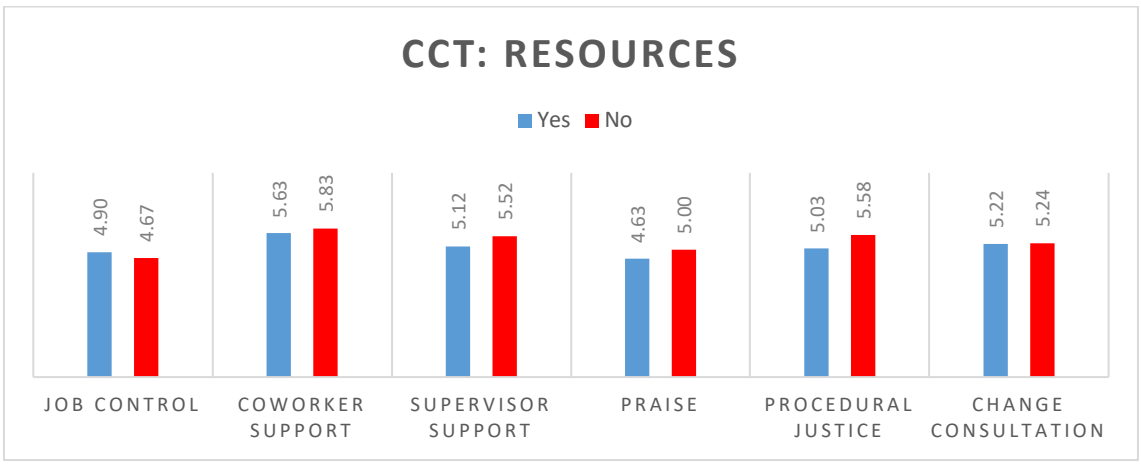
- Participants who completed GAT reported slightly higher role conflict
- Participants who completed CCT reported slightly higher role conflict, task conflict, and relationship conflict and slightly lower procedural justice.
- Participants who completed GAT reported slightly higher role conflict

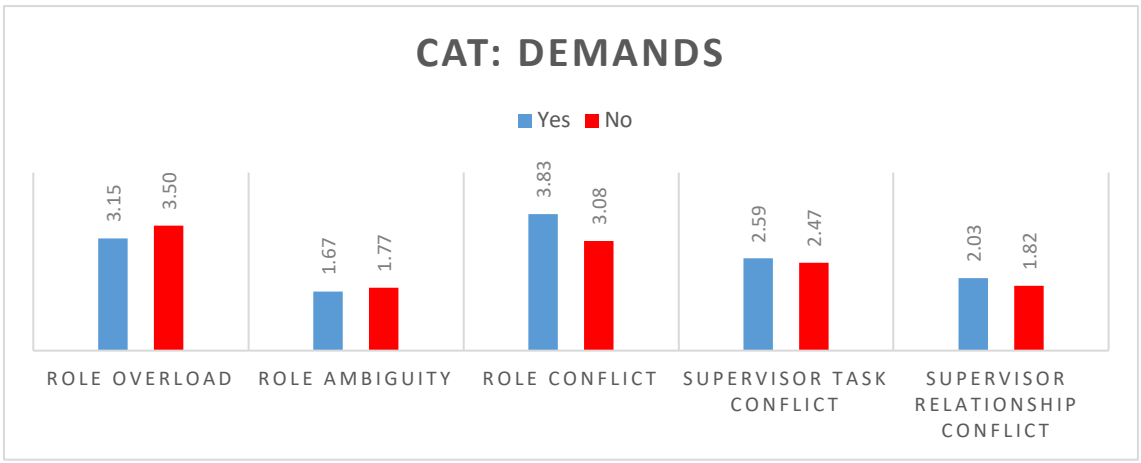
However as mentioned in the sample description, a high proportion of participants did not respond to this question, possibly leaving it blank because they had not completed the training. These participants were coded as missing in the analyses as we cannot say for certain they did not do the training and we believe this may have influenced the results.

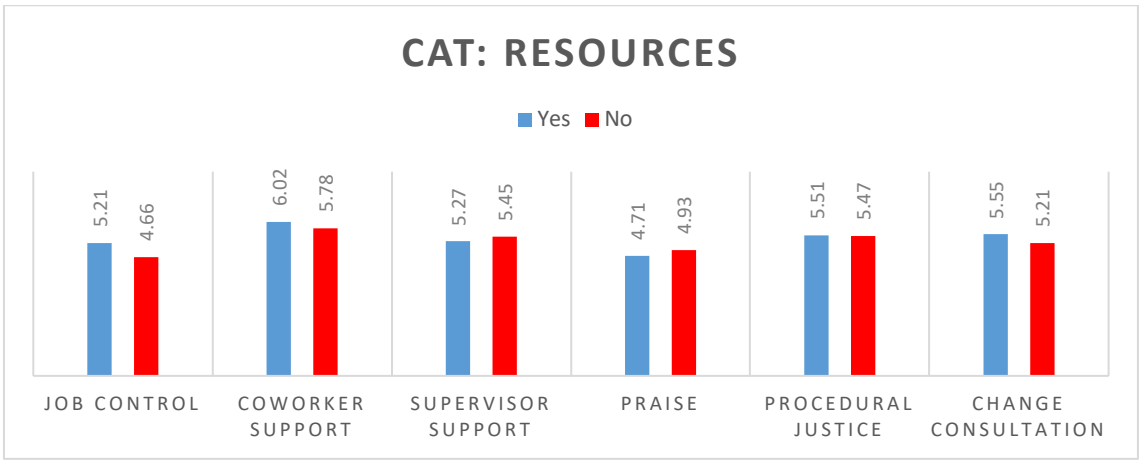



GAT: RESOURCES
Yes
No
4.79
4.54
5.79
5.76
5.29
5.59
4.88
4.98
5.36
5.57
5.27
5.15
JOB CONTROL
COWORKER SUPPORT
SUPERVISOR SUPPORT
PRAISE
PROCEDURAL JUSTICE
CHANGE CONSULTATION


CCT: DEMANDS
Yes
No
3.65
3.41
1.65
1.79
3.76
3.03
2.89
2.38
2.34
1.72
ROLE OVERLOAD
ROLE AMBIGUITY
ROLE CONFLICT
SUPERVISOR TASK CONFLICT
SUPERVISOR RELATIONSHIP CONFLICT


CCT: RESOURCES
Yes
No
4.90
4.67
5.63
5.83
5.12
5.52
4.63
5.00
5.03
5.58
5.22
5.24
JOB CONTROL
COWORKER SUPPORT
SUPERVISOR SUPPORT
PRAISE
PROCEDURAL JUSTICE
CHANGE CONSULTATION

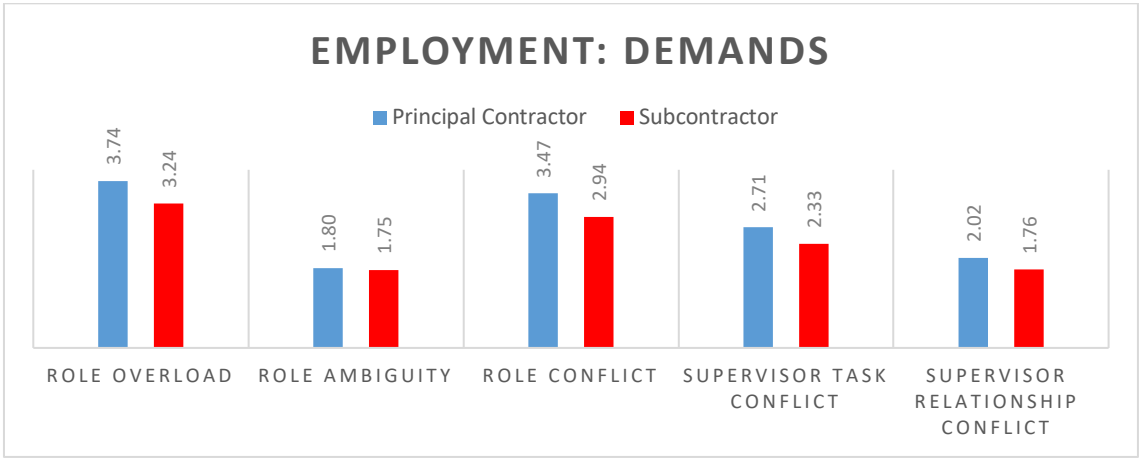


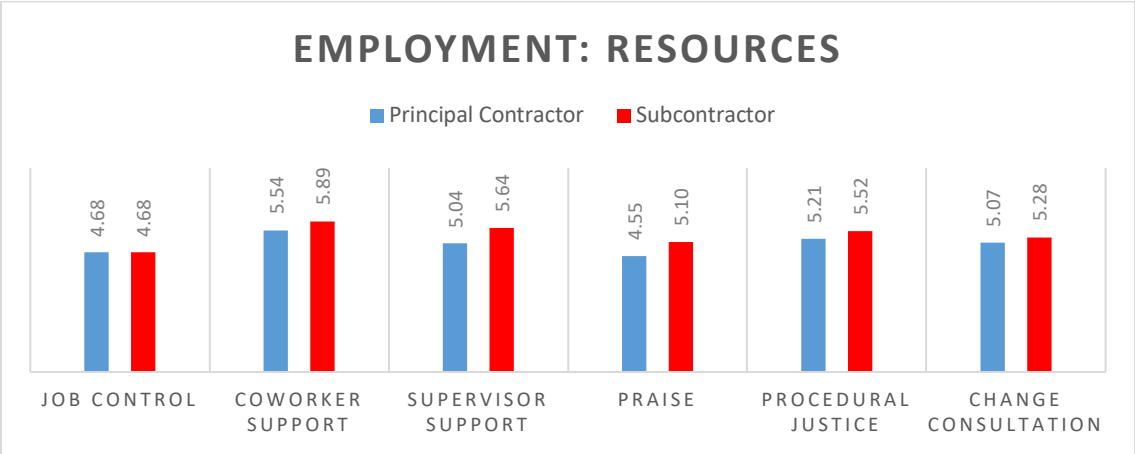


6.4 Employment

For employment type in the building industry the following differences were found:

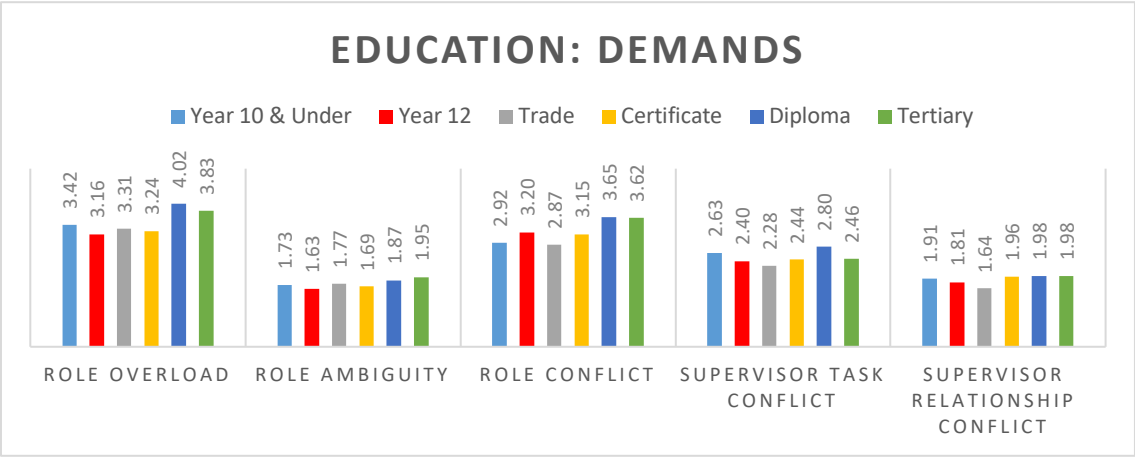
- Participants employed by a principal contractor reported higher for overload, role conflict, and supervisor task conflict;
- Participants employed as subcontractors reported higher coworker support, supervisor support, and praise.

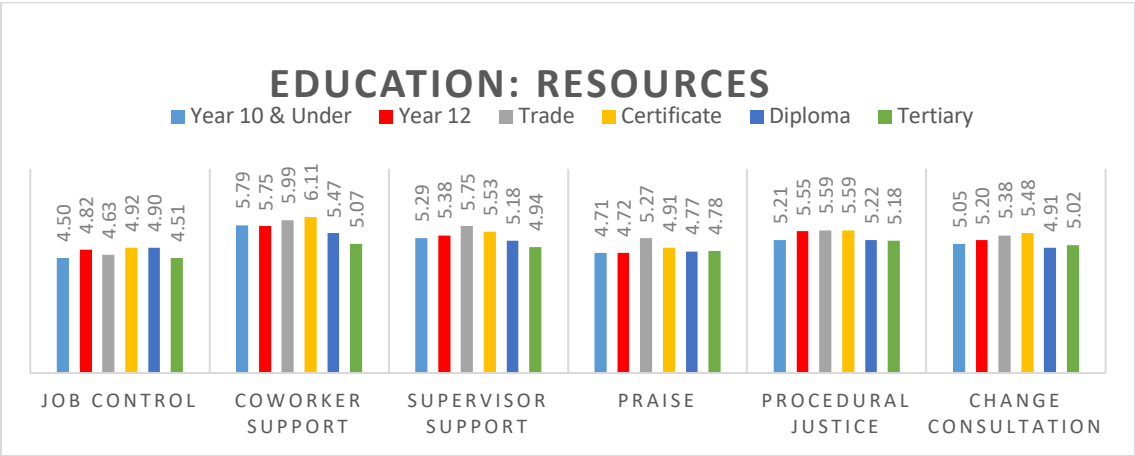




6.5 Education

Only one of the differences indicated in the graphs below reached statistical significance: participants with a tertiary-level education reported significantly lower co-worker support in comparison to all other participants, except for who achieved Diplomas.

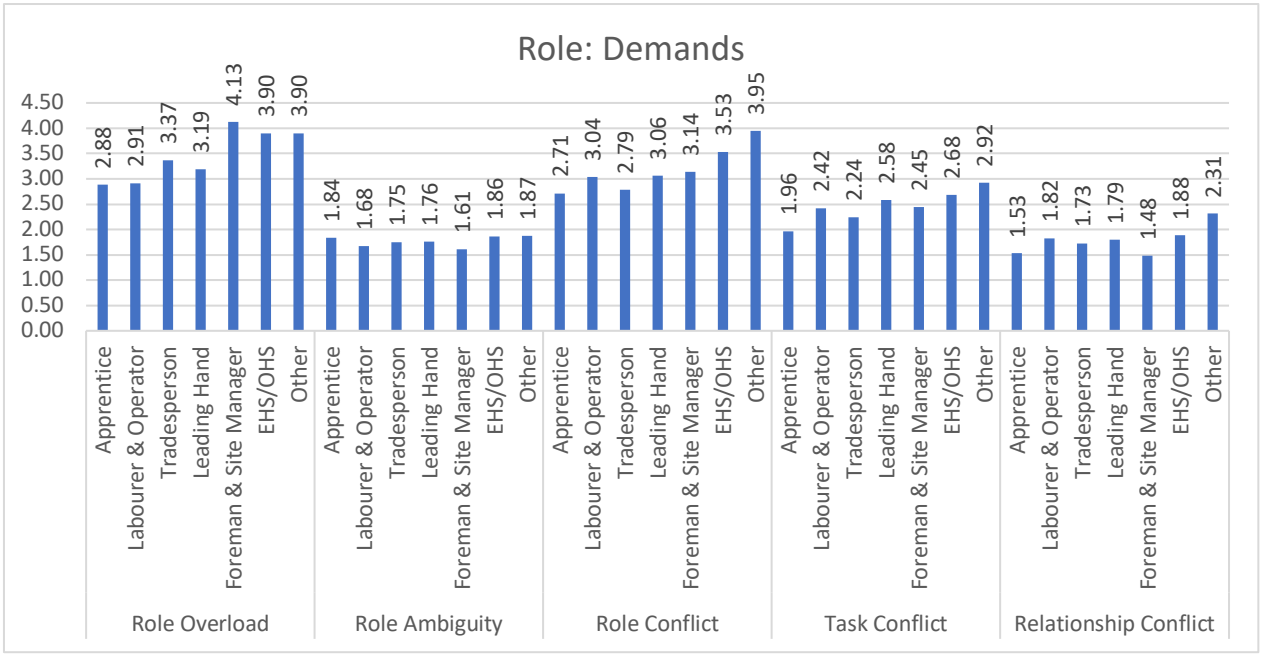


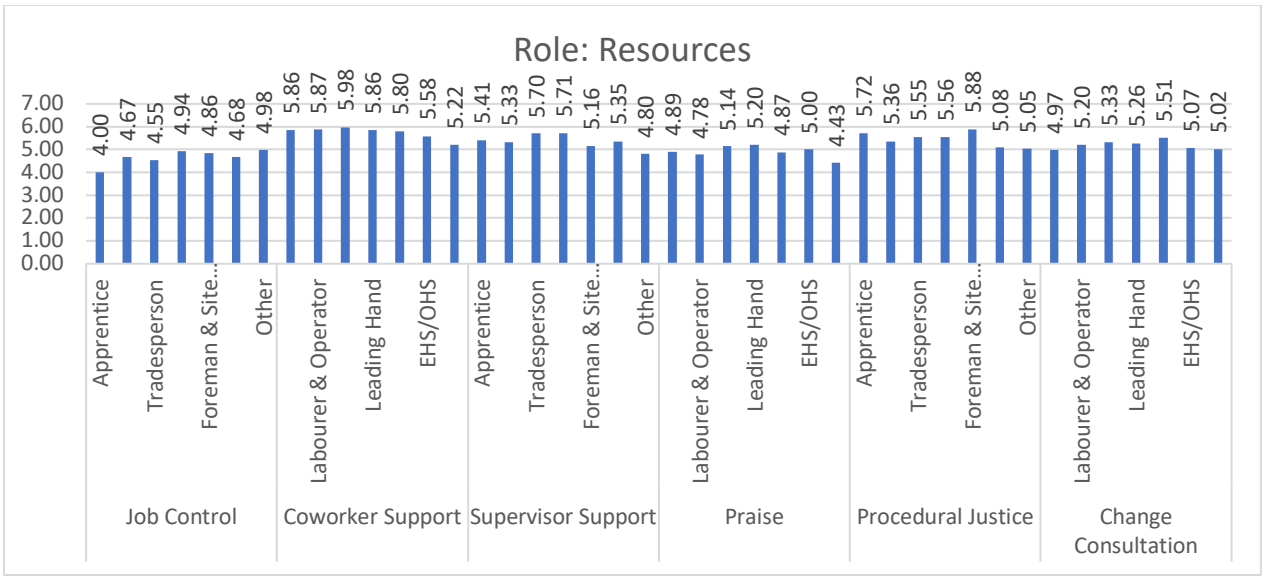


6.6 Role

Only a small number of significant differences were identified for role:

- Role Overload: averages for Forman/Site Manager were slightly higher than averages for Apprentice and Labour;
- Role Conflict: averages for "other" were slightly higher than averages for Apprentice, Labourer/Operator, Tradesperson, and Leading Hand.
- Supervisor Task Conflict: averages for "other" were slightly higher than averages for Apprentice and Tradesperson;
- Coworker Support: averages for "other" were slightly lower than averages for Labourer/Operator and Tradesperson;
- Supervisor Support: averages for "other" were slightly lower than averages for Leading Hand and Tradesperson.

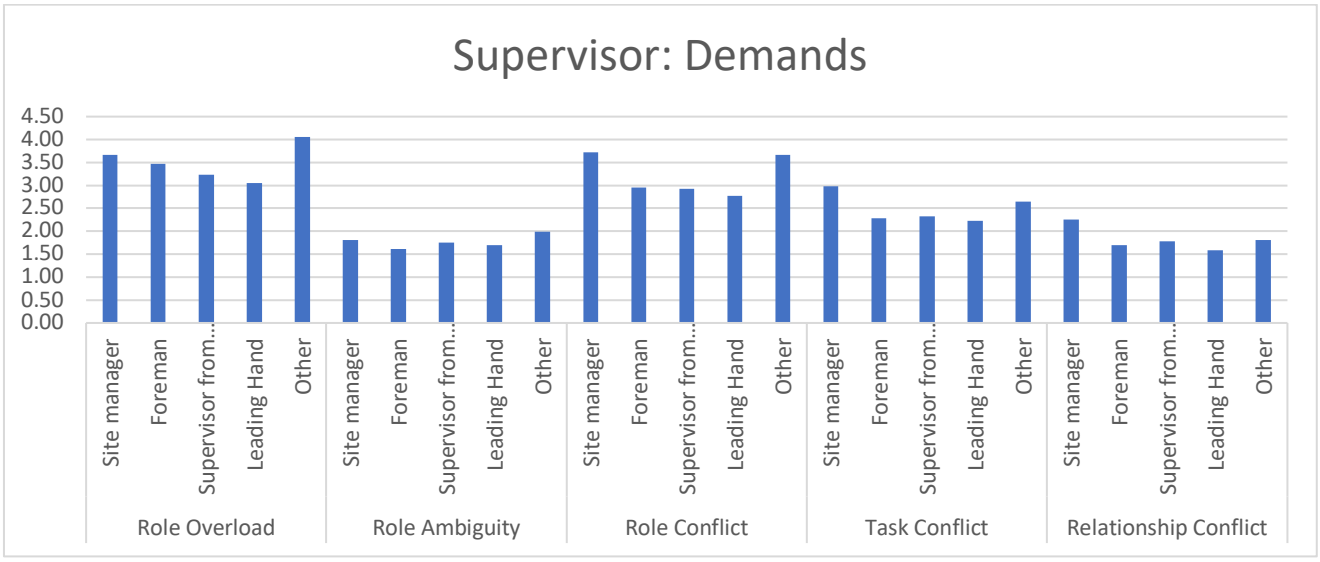


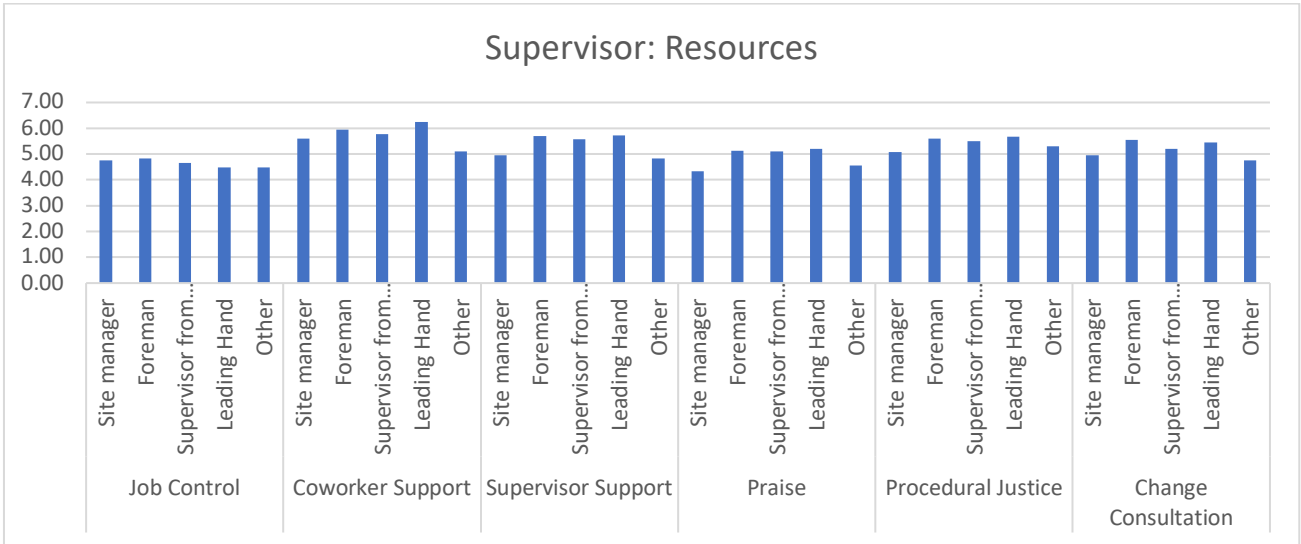


6.7 Supervisor

Only a small number of significant differences were identified for supervisor:

- Participants whose supervisor was a site manager reported significantly higher Role Conflict, Supervisor Task Conflict, and Supervisor Relationship Conflict compared to participants whose supervisors were Foreman, Leading Hands, or Supervisors from the Employing Company;
- Participants whose supervisor was a site manager reported significantly lower Supervisor Support and Praise and Recognition compared to participants whose supervisors were Foreman, Leading Hands, or Supervisors from the Employing Company;
- Participants whose supervisor were Leading Hands reported significantly higher co-worker Support compared to participants whose supervisors were Leading Hands or were categorised as "Other" (e.g., Construction Manager, Project Manager, etc).





7.0 References

Agho, A. O., Price, J. L., & Mueller, C. W. (1992). Discriminant validity of measures of job satisfaction, positive affectivity and negative affectivity. *Journal of Occupational and Organizational Psychology, 65*(3), 185-195. doi:10.1111/j.2044-8325.1992.tb00496.x

Australian Bureau of Statistics. (2019). *Gender indicators, australia*. Retrieved from Canberra, Australia: https://www.abs.gov.au/statistics/people/people-and-communities/gender-indicators-australia/latest-release#data-download

Burr, H., Berthelsen, H., Moncada, S., Nubling, M., Dupert, E., Demiral, Y., . . . Pohrt, A. (2019). The third version of the copenhagen psychosocial questionnaire. *Safety and Health at Work, 10*(4), 482-503. doi:10.1016/j.shaw.2019.10.002

Colquitt, J. A. (2001). On the dimensionality of organizational justice: A construct validation of a measure. *Journal of Applied Psychology, 86*(3), 386-400. doi:10.1037/0021-9010.86.3.386

Cousins, R., MacKay, C. J., Clarke, S. D., Kelly, C., Kelly, P. J., & McCaig, R. H. (2004). Management standards' and work-related stress in the uk: Practical development. *Work & Stress, 18*(2), 113-136. doi:10.1080/02678370410001734322

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*(3), 297-334. doi:10.1007/bf02310555

Dietz, J., Robinson, S. L., Folger, R., Baron, R. A., & Schulz, M. (2003). The impact of community violence and an organization's procedural justice climate on workplace aggression. *Academy of Management Journal, 46*(3), 317-326. doi:10.5465/30040625

Goldberg, D. (1972). *The detection of psychiatric illness by questionnaire*. London, UK: Oxford University Press.

Goldberg, D., & Williams, P. (1988). *A user's guide to the general health questionnaire*. Windsor, UK: NFER-Nelson.

Graham, K. A., Dust, S. B., & Ziegert, J. C. (2018). Supervisor-employee power distance incompatibility, gender similarity, and relationship conflict: A test of interpersonal interaction theory. *Journal of Applied Psychology, 103*(3), 334-346. doi:10.1037/apl0000265

Haynes, C. E., Wall, T. D., Bolden, R. I., Stride, C., & Rick, J. E. (1999). Measures of perceived work characteristics for health services research: Test of a measurement model and normative data. *British Journal of Health Psychology, 4*(3), 257-275. doi:10.1348/135910799168614

Hu, L.-t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternative. *Structural Equation Modeling, 6*(1), 1-55. doi:10.1080/10705519909540118

Jehn, K. A. (1995). A multimethod examination of the benefits and deteriments of intragroup conflict. *Administrative Science Quarterly, 40*(2), 256-282. doi:10.2307/2393638

Jehn, K. A., Greer, L., Levine, S., & Szulanski, G. (2008). The effects of conflict types, dimensions, and emergent states on group outcomes. *Group Decision & Negotiation, 17*(6), 465-495. doi:10.1007/s10726-008-9107-0

Jimmieson, N. L., Peach, M., & White, K. M. (2008). Utilising the theory of planned behaviour to inform change management: An investigation of employee intentions to support organisational change. *The Journal of Applied Behavioral Science, 44*(2), 237-262. doi:10.1177/0021886307312773

Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S.-L. T., . . . Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalances and trends in non-specific psychological distress. *Psychological Medicine, 32*(6), 959-976. doi:10.1017/s0033291702006074

Keyes, C. L. M. (2005). The subjective well-being of america's youth: Toward a comprehensive assessment. *Adolescent & Family Health, 4*(1), 3-11. Retrieved from https://www.researchgate.net/publication/232509662https://www.researchgate.net/publication/232509662

Kuorinka, I., Jonsson, B., Kilbom, A., Vinterberg, H., Biering-Sørensen, F., Andersson, G., & Jørgensen, K. (1987). Standardised nordic questionnaires for the analysis of musculoskeletal symptoms. *Applied Ergonomics, 18*(3), 233-237. doi:10.1016/0003-6870(87)90010-x

People at Work. (2016). *An assessment of psychsocial hazards in the workplace: Final report to partner organisations*. Retrieved from https://www.worksafe.qld.gov.au/__data/assets/pdf_file/0005/125546/paw-report.pdf

Schat, A. C. H., Kelloway, E. K., & Desmarais, S. (2005). The physical health questionnaire (phq): Construct validation of a self-report scale of somatic symptoms. *Journal of Occupational Health Psychology, 10*(4), 363-381. doi:10.1037/1076-8998.10.4.363

Shevlin, M., & Adamson, G. (2005). Alternative factor models and factorial invariance of the ghq-12: A large sample analysis using confirmatory factor analysis. *Psychological Assessment, 17*(2), 231-236. doi:10.1037/1040-3590.17.2.231

Siegrist, J., Starke, D., Chandola, T., Godin, I., Marmot, M., Niedhammer, I., & Peter, R. (2004). The measurement of effort-reward imbalance at work: European comparisons. *Social Science & Medicine, 58*(8), 1483-1499. doi:10.1016/s0277-9536(03)00351-4

Vandenberg, R. J., & Nelson, J. B. (1999). Disaggregrating the motives underlying turnover intentions: When do intentions predict turnover behavior? *Human Relations, 52*(10), 1313-1336. doi:10.1177/001872679905201005

Warr, P. (1991). Mental health, well-being, and job satisfaction. In H. B. & A. A. (Eds.), *Psychological perspectives on occupational health and rehabilitation* (pp. 143-165). London, UK: Harcourt Brace.

Watson, D., & Clark, L. A. (1984). Negative affectivity: The disposition to experience aversive emotional states. *Psychological Bulletin, 96*(3), 465-490. doi:10.1037/0033-2909.96.3.465

8.0 Appendix A – Final Survey Item List

Role Overload

1. I am pressured to work long hours
2. I have unachievable deadlines
3. I have unrealistic time pressures
4. I have to neglect some tasks because I have too much to do

Role Ambiguity

5. I am clear what is expected of me on this job
6. I know how to do the tasks required to get my job done
7. I am clear what my duties and responsibilities are on this job
8. I understand how my work fits into the overall goals of this project

Role Conflict

9. Different work groups on this site demand things from me that are difficult to do at the same time
10. Different people on this job expect conflicting things from me
11. I receive incompatible requests from two or more people on this job

Job Control

12. I have a choice in deciding what I do on this job
13. I have some say over the way I get the work done on this job
14. I have a say in my own work speed on this job

Co-Worker Support

15. If the work gets difficult, my co-workers will help me
16. I get the help and support I need from my co-workers
17. My co-workers are willing to listen to my work-related problems

Supervisor Support

18. If the work gets difficult, my direct supervisor on this job will help me
19. I get the help and support I need from my direct supervisor on this job
20. My direct supervisor on this job is willing to listen to my work-related problems

Supervisor Task Conflict

21. There are conflicts about ideas between me and my direct supervisor on this site
22. I have conflict with my direct supervisor on this site about the work I do
23. There are differences of opinion between me and my direct supervisor on this site

Supervisor Relationship Conflict

24. There are bad feelings between me and my direct supervisor on this site
25. There are personality conflicts evident between me and my direct supervisor on this site
26. There is emotional conflict between me and my direct supervisor on this site

Praise & Recognition

27. I feel that my direct supervisor on this job values my contributions to this organisation
28. My direct supervisor on this job gives me sufficient credit for my hard work
29. My direct supervisor on this job encourages me in my work with praise and thanks

Procedural Justice

30. Supervisors consistently follow the policies and procedures set out for this site
31. My direct supervisor on this job takes employee interests into account when making important decisions
32. My direct supervisor on this job treats employees with respect and dignity as individuals

Change Consultation

33. I am consulted about proposed changes on this job
34. When changes are made on this job, I am clear about how they will work out in practice
35. I am clearly informed about the nature of the changes that take place in my workgroup
36. I can voice concerns about changes that affect my job