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Work design, anxiety and depression: A call centre case study

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CHAPTER 4
RESULTS

4.1 Introduction

The current study presents the findings from the questionnaires collected from 56 call centre agents.

The first section presents the demographic description of the sample to provide a background against which the results are interpreted.

The second section presents the reliability of each of the different demographic groups.

The third section presents descriptive information on different demographic groups measured in the current research and compares the certain demographic variables on these groups to determine if there are any significant differences in the views of the different groups.

The fourth section of the results is outlined with reference to hypotheses addressing the relation between work design and depression and anxiety in call centre staff.

4.2 Demographic description of the sample

In the first section of the questionnaire respondents were asked to indicate some biographical information about themselves such as: age; gender, education, ethnic group, and vocational qualifications (refer to Appendix B).

Other questions in this section focussed on their working environment such as: nature of calls handled, length of time in the call centre industry, length of time in this call centre, length of

time in the current role, work patterns, nature of the employment contract, and interest in staying in the call centre.

4.2.1 Biographic questions

Age distribution of the sample (n = 56)

The sample is very homogenous in terms of age, most of the respondents are aged between 20 – 29 years of age (80%). Most of the rest of the respondents are between 30-39% (18%). The sample respondents are therefore relatively young.

Gender distribution (n = 56)

The sample is comprises 41% males and 59% females. The distribution is relatively even and the sample is only slightly skewed towards females.

The highest education level of respondents is presented next.

Highest education level of respondents

Most respondents have at least some form of post matric qualification (82%), most having a diploma (43%) or certificate (26%).

Ethnic group (n = 55)

Most of the sample is Black (67%) with 16% White respondents and 11% Asian respondents. Only 5% of the sample is Coloured.

4.2.2 Occupationally related questions

Questionnaires were collected from two call centres and the sample split between these two groups is discussed in the next section.

Percentage respondents in the different call centres (n = 56)

From the nature of calls handles, it is seen that just more than half (54%) handle only inbound calls but 46% handle both inbound and outbound calls.

Table1 compares the length of time in the industry, in this specific call centre and in their current positions.

Table 1: Length of time employed in industry, current call centre and in current position

	Length of time in industry	Length of time in Call Centre	Length of time in current position
<2 months	4%	7%	11%
3-6 months	5%	11%	23%
7months-1year	27%	27%	29%
1-2 years	42%	46%	36%
3-5 years	11%	9%	2%
6-10 years	11%	0%	0%

Figure A presents the distribution across various types of employment contracts. Most respondents are Permanent/ fulltime employees (59%), and 34% are temporary/fixed term.

Figure A: Nature of employment contract

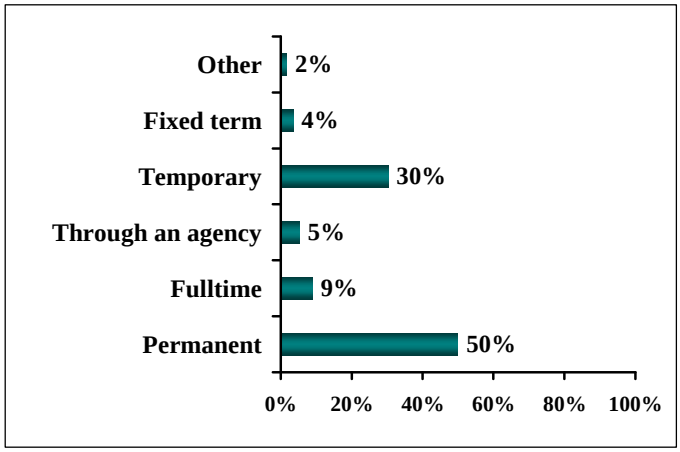
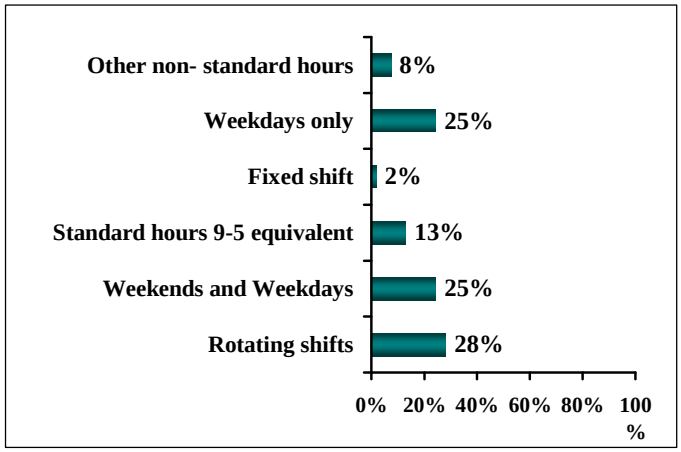


Figure B presents the distribution across different working patterns that call centre agents can work according to.

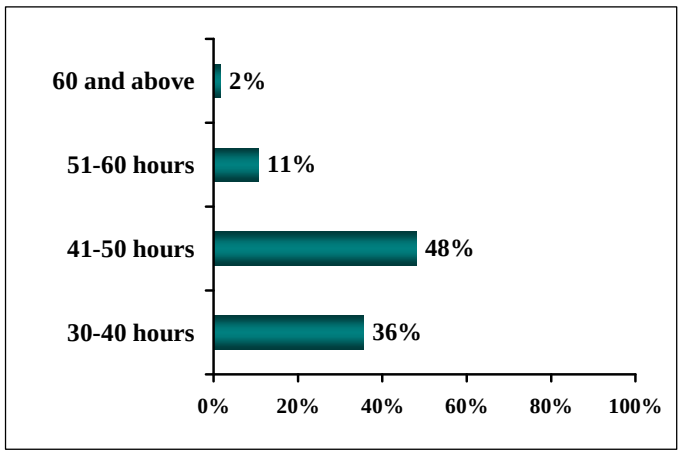
Figure B: Work Patterns



Only 25% of the sample work normal weekdays only, and most other respondent work either rotation shifts (28%) or weekends in addition to weekdays (25%).

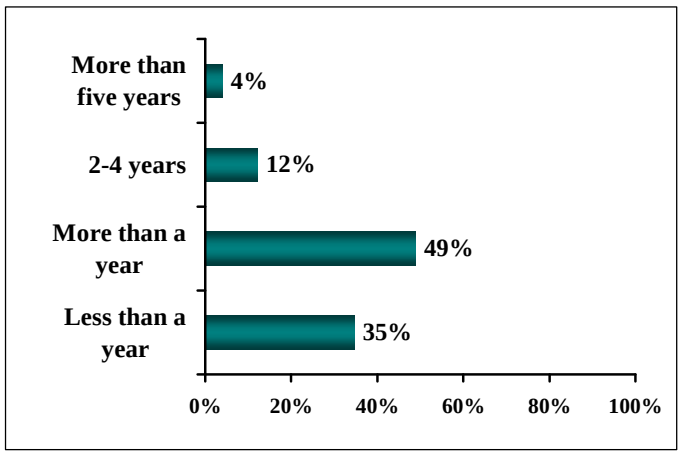
The hours worked per week is presented in Figure C. Most respondents work between 41-50 hours per week (48%) or less (36% work 30-40 hours).

Figure C: Hours of work per week



Respondents were asked, lastly in the biographic scale question 7, if they would be interested in staying in the call centre and the results are presented in Figure D.

Figure D: Interest in staying in the call centre



49% of the sample reported to have an interest of staying in the call centre industry for more than a year but less than 2 years. Almost 35% reported to have an interest of staying less than a year in the call centre and only 20% reported an interest of 2-5 years and more.

Table 2: Cross-tabulation between Interest in staying in call centre industry with number of years working in the industry (n = 49)

		Interest in staying in the call centre			
		Less than a year	More than a year	2-4 years	More than five years
Length in call centre industry	3-6 months	0%	8%	0%	0%
	7months - 1year	18%	46%	0%	0%
	1-2 years	65%	29%	50%	0%
	3-5 years	6%	4%	33%	100%
	6-10 years	12%	13%	17%	0%
	Total	**100**	**100**	**100**	**100**

The table above indicates that those that intent to stay in the Call Centre industry have also been employed in the industry for a longer time. 46% of those who have worked in the industry for more than a year, but less than 2, intend to stay for less than a year, while 65% of

those who have only worked for less then a year appear to only want to work for another 1-2 years.

4.3 Reliability analysis

The scales of interest in the current study are those of the JCI and those of the Anxiety and Depression measurement instruments.

4.3.1 Reliability analysis of the JCI

The JCI measurement instrument measure six different sub-scales namely: Variety, Autonomy, Task Identity, Feedback, Dealing with others and Friendship. Items 10 and 15 of the JCI are negatively scored.

A single factor solution was performed to determine if these items do actually load negatively with the rest of the items. The factor analysis will not be used to identify any underlying dimensions, as the sample size is not sufficient, but only for the purposes of confirming the negative loadings on certain items.

The Cronbach Alpha was calculated for each of the scales as a measure of internal validity. An **item analysis** was also performed. An item analysis refers to the re-calculation of the reliability of the scale should the item be left out of the scale. If an item does not contribute positively to the internal reliability (the Cronbach alpha increases without the item) the item should rather be excluded from the scale, resulting in a more reliable measurement of a concept. The choice of when an increase in Alpha is sufficient to warrant the exclusion of an item is at the discretion of the researcher.

The Item analyses for each of the six JCI scales are given in Table 3.

Table 3: Item analysis for the JCI subscales

VARIETY		AUTONOMY		TASK IDENTITY	
Item	**Cronbach's Alpha if Item Deleted**	**Item**	**Cronbach's Alpha if Item Deleted**	**Item**	**Cronbach's Alpha if Item Deleted**
JCI1	0.624	JCI2	0.556	JCI11	-0.027
JCI5	0.702	JCI4	0.513	JCI23	0.420
JCI10	0.684	JCI8	0.573	JCI28	0.442
JCI15	0.662	JCI16	0.625		
JCI21	0.596	JCI22	0.489		
JCI27	0.527	JCI29	0.612		
		JCI33	0.463		
Overall Cronbach Alpha = 0.679		**Overall Cronbach Alpha = 0.592**		**Overall Cronbach Alpha = 0.400**	
FEEDBACK		**DEALING WITH OTHERS**		**FRIENDSHIP**	
Item	**Cronbach's Alpha if Item Deleted**	**Item**	**Cronbach's Alpha if Item Deleted**	**Item**	**Cronbach's Alpha if Item Deleted**
JCI3	0.609	JCI6	0.453	JCI7	0.621
JCI2	0.725	JCI9	0.443	JCI3	0.717
JCI17	0.650	JCI14	0.418	JCI19	0.689
JCI24	0.528	JCI20	0.314	JCI25	0.572
JCI30	0.601	JCI26	0.465	JCI31	0.543
JCI34	0.667	JCI32	0.201		
		JCI35	0.262		
Overall Cronbach Alpha = 0.677		**Overall Cronbach Alpha = 0.413**		**Overall Cronbach Alpha = 0.686**	

The first sub-scale, Variety, shows an acceptably high Cronbach Alpha of 0.679. The exclusion of item 5 might increase this by 0.023 but this increase is not considered large enough to valid the exclusion of item 5, especially as the reliability is already satisfactory high.

In terms of Autonomy, the reliability of 0.592 is lower and although the exclusion of item 6 could raise it to above 0.6, the value is already very close to 0.6 and the item is not excluded.

The sub-scale Task Identity shows a very low reliability of 0.400, which would be unacceptable low. The reliability of this scale cannot be improved much by the exclusion of any one item. This scale however does only comprise of three items and the Cronbach Alpha is influenced by the number of items and after applying the Spearman Brown formula for

predicting the Alpha should more items be included, the alpha rises to 0.666 which is acceptable.

Spearman Brown = (3x .4) / 1+ (2 x .4)
= (3x .4) / (2 x .4) +1
= 1.2/1.8
= .666

Feedback and Friendship show acceptably high internal reliabilities of 0.677 and 0.686. Dealing with others however has a Cronbach Alpha of only 0.413 and as the scale is already comprised of seven items, the Spearman Brown formula need not be applied and the reliability of the scale cannot be improved by the exclusion of any items. Therefore this scale will be disregarded during the rest of the analysis.

The reliability of the total JCI scale, the mean across all of the scales with high reliabilities, is 0.871.

4.3.2 Reliability analysis of Anxiety and Depression Scale

The Anxiety and Depression scale measures these two concepts. Items 1-6 measure Anxiety and 7-12 measure Depression.

Again a single factor solution was performed to determine which items load negatively relative to the other items. It can be seen that, as the questionnaire guidelines indicate, that the first three items of each scale needs to be reverse scores.

After reverse scoring the items, the item analysis for these two scales were performed.

Table 4: Item analysis of the Anxiety and Depression scale

ANXIETY		DEPRESSION	
Item	**Cronbach's Alpha if Item Deleted**	**Item**	**Cronbach's Alpha if Item Deleted**
ADS1	0.588	ADS7	0.770
ADS2	0.610*	ADS8	0.712
ADS3	0.523	ADS9	0.726
ADS4	0.508	ADS10	0.683
ADS5	0.498	ADS11	0.728
ADS6	0.495	ADS12	0.710
Overall Cronbach Alpha = 0.584		**Overall Cronbach Alpha = 0.758**	

* Item Excluded

The Anxiety scale has slightly lower reliability of 0.584 and as 0.6 is the minimum cut off accepted as a reliable scale, Item 2 is excluded from this scale to result in a final reliability of 0.610, which is acceptable.

Depression shows a high reliability of 0.758.

In summary, almost all sub-scales have shown themselves to be reliable with Cronbach alpha values of above 0.6 (with the exception of 0.592 which is very close) and remain unchanged. The exceptions are Dealing with others that have a low alpha of 0.413 and this scale is excluded from the analysis. Anxiety was improved to above the 0.6 level by excluding one question (item 2) from the scale. Task identity initially showed a low reliability of 0.4 yet after applying the Spearman Brown formula to estimate the Alpha should there have been more items, the reliability is 0.666.

The next section presents the mean scores on each of these sub-scales and then compares the two samples obtained from different call centres to determine if they are similar in terms of their levels of JCI sub-scales (Work design), Anxiety and Depression.

4.4 Descriptive information on the different scales

The table below indicates the descriptive information on the various scales created. Both scales ranged from 1 – 5. For the JCI scale a 1 indicated a negative score and 5 indicated a positive score. Variety and Autonomy scored the lowest of the Work design sub-scales, with means scores of only 2.65 and 3.09 respectively.

Table 5: Descriptive information on the various scales

	Minimum	Maximum	Mean	Std. Deviation
Work Design				
Total JCI	1.48	4.33	3.16	0.517
Variety	1.00	3.83	2.65	0.677
Autonomy	1.29	4.43	3.09	0.606
Task Identity	1.00	4.67	3.35	0.727
Feedback	2.17	4.83	3.46	0.652
Friendship	1.40	4.80	3.35	0.742
Anxiety and Depression				
Anxiety	1.60	5.00	3.22	0.821
Depression	1.50	5.17	3.17	0.839

In terms of Anxiety and Depression, a high score indicates a low anxiety or depression level. From the figure above it is noticeable that see the levels of anxiety are slightly lower than the depression value although both are still just above the mid mark leaning towards the high pole but indicating to lower levels of anxiety and depression.

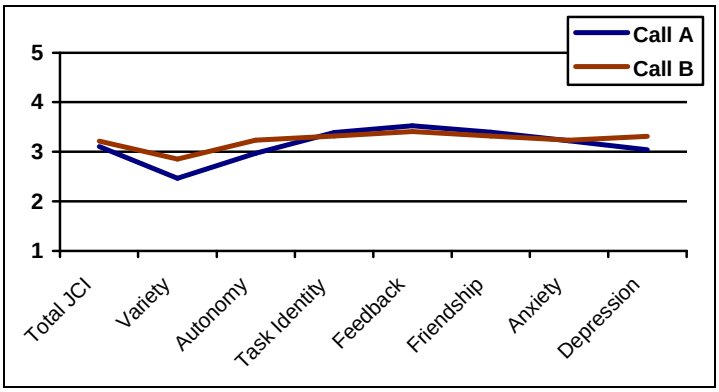
4.5 Testing for differences between Demographic groups

As a matter of interest this section compares the results from certain demographic groups, such as the call centres from which results are obtained and gender on the JCI scales, Anxiety and Depression. These are two variables that could potentially have an impact on perception and any differences are explored.

4.5.1 Comparing the two Call Centres

Figure E presents the mean scores of each of the different call centres graphically.

Figure E: Call Centre A and Call Centre B's mean scores on the different scales



Call centre A and B are very close to one another except with regards to Variety, Autonomy and Depression where one call centre is slightly higher than the other. To test these differences statistically the t-test for independent measures were used.

Table 6: Comparing the two call centres: t-test for independent means

	Call centre A	**Call centre B**	**T-value**	**p-value**
	Mean	**Mean**		
Total JCI	3.11	3.22	-0.79	0.433
Variety	2.5	2.9	-2.27	0.027*
Autonomy	3.0	3.2	-1.68	0.100
Task Identity	3.4	3.3	0.36	0.723
Feedback	3.5	3.4	0.64	0.526
Friendship	3.4	3.3	0.37	0.711
Anxiety	3.2	3.2	-0.04	0.968
Depression	3.0	3.3	-1.23	0.224

* Significant difference

Only in terms of Variety is there a significant difference between the two samples (p = 0.027 which is smaller than the set level of significance of 0.05). To investigate any possible reason for this increased feeling of variety in Call Centre B, the types of calls they take were compared in table 7.

Table 7: Cross tabulation between the types of calls and the Call centres.

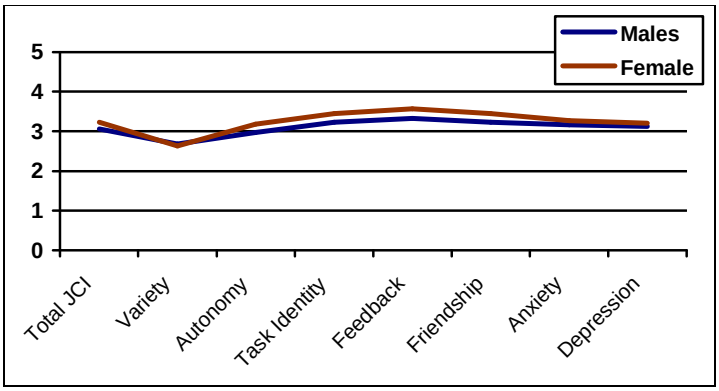
Type of call	Call centre A	Call centre B
Inbound	32%	77%
Both inbound and outbound	68%	23%
Total	100%	100%

While it might have been the nature of the calls that add 'Variety" it does not appear to be the case, as Call centre A actually handles a larger variety of calls – inbound and outbound and Call centre B mostly handles inbound only.

4.5.2 Comparing Males and Females

As with the two call centres, male and female results are also compared. Figure F presents the mean scores of males and females on the work design and ADS scales.

Figure F: Scores on JCI, Anxiety and Depression for males and females



On most of the JCI sub-scales females scored slightly higher than males. Their scores on Anxiety and Depression is however virtually identical. The t-test for independent means results is presented in the Table 8.

Table 8: Comparing males and females: t-test for independent means

	Males	Females		
	Mean	Mean	T-value	p-value
Total JCI	3.06	3.23	-1.16	0.250
Variety	2.7	2.6	0.24	0.810
Autonomy	3.0	3.2	-1.30	0.199
Task Identity	3.2	3.4	-1.08	0.286
Feedback	3.3	3.6	-1.41	0.164
Friendship	3.2	3.4	-1.03	0.307
Anxiety	3.2	3.3	-0.52	0.607
Depression	3.1	3.2	-0.37	0.716

While females scored slightly higher than males on every scale except Variety, this different is not statistically significant as none of the p-values are smaller than 0.05.

4.6 Relationship between work design, anxiety and depression

The purpose of this section is to test whether there is a relationship between the work design, anxiety and depression levels experienced by the call agents.

A Pearson correlation analysis was performed to determine the strength and significance of linear relationship between variables. Table 9 presents the correlation analysis results. The first table presents the overall correlations while the second table presents the correlations between Anxiety, Depression and the sub-scales of the JCI.

Table 9: Correlation between JCI, Anxiety and Depression

		Anxiety	Depression	JCI total
Anxiety	Pearson Correlation	1.00	0.62	0.34
	p-value		0.000	0.009
Depression	Pearson Correlation	0.62	1.00	0.33
	p-value	0.000		0.012
JCI total	Pearson Correlation	0.34	0.33	1.00
	p-value	0.009	0.012	

Significant positive correlations exist between all the variables. As a high score on Anxiety and Depression actually indicates a low anxiety and depression score, this indicates that the higher the JCI score is the lower will the anxiety and depression levels be. All correlations show p-values of below the cut off mark of 0.05.

The significant relationship that appears to exist between work design, anxiety and depression, illustrates that the manner in which work is design may certainly have an impact on the anxiety and depression levels of the employees. The more intense the work design is the higher the levels of anxiety and depression experienced by the employees. Relatively the more comfortable the work design is the less the anxiety and depression levels experienced by the employees.

Anxiety and Depression actually also have a strong correlation of 0.62 (strong effect as indicated by Cohen, 1988). This indicates that the higher depression is within a respondent the higher also their anxiety levels.

Even though a significant correlation found between the JCI and Anxiety and Depression scales, not all of the sub-scales of JCI actually show a significant correlation with Anxiety and Depression. Autonomy and Feedback to some degree correlate with Anxiety (p=0,004; and p=0.053). Variety and Autonomy correlated significantly and positively with Depression (p = 0.004; and p = 0.017).

Table 10 looks at the correlation between Anxiety, Depression and the sub-scales of Work design (JCI).

Table 10: Correlation between JCI sub-scales, Anxiety and Depression

		Work Design sub-scales				
		Variety	**Autonomy**	**Task Identity**	**Feedback**	**Friendship**
Anxiety	Pearson Correlation	0.23	0.38	0.24	0.26	0.18
	p-value	0.084	0.004	0.069	0.053	0.174
Depression	Pearson Correlation	0.38	0.32	0.17	0.19	0.17
	p-value	0.004	0.017	0.205	0.171	0.214

4.7 Summary of Results

These results indicate that the sample comprised of relatively young employees. Majority of the sample were female employed on a permanent/ fulltime base. On most of the JCI sub-scales females scored slightly higher than males, however their scores on Anxiety and Depression is however virtually identical. Most respondents indicated to have at least some form of post matric qualification most having a diploma or certificate. It was also noted that most of the sample is Black (67%) with 16% White respondents and 11% Asian respondents. Only 5% of the sample is Coloured. In addition majority of the sample reported to have an interest of staying in the call centre industry for more than a year but less than 2 years. The results indicate that those that intent to stay in the Call Centre industry have also been employed in the industry for a longer time.

Overall, the findings indicate that a relationship exists between Work design, Anxiety and Depression. However a non significant relationship was found between some JCI sub scales and Anxiety and Depression levels. The results also showed that the higher the JCI score is the lower will the anxiety and depression levels be.

The findings will be discussed in more detail in the next chapter, followed by the conclusion of the study, as well as the limitations and recommendations for the study and for the future research.