CHAPTER 9

RESULTS

9.1 Introduction

This chapter outlines the quantitative analysis of the scored data collected by means of the questionnaires. The statistical procedures used include descriptive statistics for the variables measured by each questionnaire, determination of the Cronbach alpha reliability coefficients for each of these instruments, correlations between the various variables measured by the tests with respect to the total group and five biographical variables, inferential statistics including z-tests, t-tests for related groups, general linear modelling with ANOVA option, Scheffé tests, and effect size for the different variables measured by the various questionnaires and five biographical variables.

9.2 Descriptive statistics

A detailed description analysis of the scored data for this study was obtained for the total group, the two genders, the four age groups, the two marital categories, the four business sectors, the five qualification divisions, and the three position levels with regard to the eight scales of the Experience of Work and Life Circumstances Questionnaire, the four scales for both experienced and witnessed aggression of the Aggression in the Workplace Questionnaire, the eight IPAT Anxiety Scales, the Beck Depression Inventory, the Penn State Worry Questionnaire, and the ten scales of the Social Problem-Solving Inventory– Revised (Reported in Appendix A).

9.3 Cronbach alpha reliability coefficients

The Cronbach alpha reliability coefficients were obtained for the Experience of Work and Life Circumstances Questionnaire and its subscales (WLQ), the Aggression in the Workplace Questionnaire and its subscales, witnessed and experienced (AWQ), the IPAT Anxiety Scale, the Beck Depression Inventory, the Penn State Worry Questionnaire, and the Social Problem-Solving Inventory-Revised and its subscales (SPSIR) (Reported in Appendix A). This was achieved by using the Item and Test Analysis Program – ITEMMAN™ version 3.50.

The Cronbach alpha reliability coefficients and its subscales ranged from 0.74 to 0.95 that was indicative that the WLQ and its subscales had a good to very good reliability. In the case of the AWQ the values were found to vary from 0.87 to 0.88 with the overall value for witnessed aggression being 0.94 and 0.87 to 0.90 with the overall value for experienced aggression equal to 0.95. Once again it could be concluded that the AWQ had a very good reliability for both the witnessed and experienced aggression. For the IPAT Anxiety Scale the values varied from 0.84 to 0.98 indicating that this scale had an excellent reliability. The Cronbach alpha for the Beck

Depression Inventory was found to be equal to 0.95, hence indicative of a high reliability. Similarly a value of 0.91 was obtained for the Penn State Worry Questionnaire which meant that this questionnaire also had a high reliability. Finally the Cronbach alpha obtained for the SPSIR was found to range from 0.73 to 0.94 also implying that this inventory and its subscales had a very good reliability.

9.4 Inferential statistics

9.4.1 Z-test statistic

The z-test was calculated for a single population mean for a large known sample based on the sample mean, sample size, and the standard deviation. The calculation was based on the following z transformation formula:

$$z = \frac{\bar{x} - \mu}{\sigma_{\bar{x}}} \qquad \text{where } \sigma_{\bar{x}} \text{ was estimated by } \frac{s}{\sqrt{n}}$$

The level of significance was set at 95%(1 – p) that in the case of directional hypothesis testing converted to critical z values within the range of –1.645 to 1.645. Values for $\bar{x}$ and s were directly calculated from the data set. Values for μ were estimated in different ways. In the case of the Experience of Work and Life Circumstances Questionnaire (WLQ) the cut-off point demarcating normal and abnormal responses on each subscale, as was described in the official WLQ Test Manual (Van Zyl & Van der Walt, 1991:27) was used as the μ value. This approach also held for the Beck Depression Inventory. For the Aggression in the Workplace Questionnaire, IPAT Anxiety Scale, the Worry Scale, and the Social Problem-solving Inventory Revised the midscore for each subscale was used as the μ value. This last μ value was determined by the sum of midpoints across all items in the subtest and the scoring code system that was developed by the originators of the various psychological tests.

Three hypotheses were set in each comparison. In their generalized form they were:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: > 0 if z > 1.645

The null hypothesis stated that the value $\bar{x} - \mu / \sigma_{\bar{x}}$ for statistical purposes approximated 0, suggesting that any z value within the range –1.645 to 1.645 described a difference between μ and $\bar{x}$ that was so small that it could not be reliably interpreted as a significant difference beyond any reasonable doubt. H_1, in turn, implied two things, namely that μ deviated significantly from $\bar{x}$ (significantly smaller than 0) and that relative to the value of μ, the value of $\bar{x}$ as well as the raw scores from which it was calculated, were located at the lower end of the subscale. H_2 on the other hand implied that the difference between μ and $\bar{x}$ was significantly

larger than 0, whereas $\bar{x}$ and its associated raw scores were located at the upper end of the subscale that contained the larger raw scores.

9.4.1.1 Total sample

1) Experience of Work and Life Circumstances Questionnaire

As was stated in paragraph 9.4, each of the subscales of the Experience of Work and Life Circumstances Questionnaire (WLQ) was subjected to the z transformation formula. The mean value and the standard deviation were calculated from the raw scores whilst μ was estimated as was indicated earlier on.

a) Level of stress

Specific hypotheses were set in further comparisons. For the first subscale of the WLQ, level of stress (LOS) these were:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645

When the subscale of level of stress (LOS) was subjected to the z transformation formula using a mean value of 73.76, a standard deviation of 20.09, a sample size of 206, and μ_x = 79, the z value obtained was –3.74. This is indicative that the null and H_2 hypotheses are rejected in favour of the alternative hypothesis H_1. The mean score of the total sample was significantly lower than the cut-off point of the subscale meaning that the respondents generally reported low levels of stress within the range designated as normal.

b) Causes outside the work situation

For the second subscale of the WLQ, causes outside the work situation (OWS) the hypotheses that were investigated were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645

When the subscale of causes outside the work situation (OWS) was subjected to the z transformation formula using a mean value of 25.30, a standard deviation of 6.59, a sample size of 206, and μ_x = 33, the z value obtained was –16.77. This is indicative that the null and H_2 hypotheses are rejected in favour of the alternative hypothesis H_1. The mean score of the total sample was significantly lower than the cut-off point of the subscale meaning that respondents

generally reported low levels of stress due to causes arising outside the work situation and fell within the range designated as normal.

c) Organizational functioning

The hypotheses that were investigated for the third subscale of the WLQ, organizational functioning (IWSOF) were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645 (Scales have been reversed)

In this comparison the subscale of organizational functioning (IWSOF) was subjected to the z transformation formula using a mean value of 20.31, a standard deviation of 5.62, a sample size of 206, and μ_x= 17, the z value obtained was 8.45. This is indicative that the null and H_1 hypotheses are rejected in favour of the alternative hypothesis H_2. The mean score of the total sample was significantly higher than the stated cut-off point of the subscale meaning that the respondents reported lower levels of stress due to organizational functioning and generally fell in the normal range.

d) Task characteristics

The hypotheses that were investigated regarding the fourth subscale of the WLQ, task characteristics (IWSTC) were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645 (Scales have been reversed)

The subscale of task characteristics (IWSTC) was subjected to the z transformation formula using a mean value of 50.24, a standard deviation of 7.17, a sample size of 206, and μ_x= 41, the z value obtained was 18.50. This is indicative that the null and H_1 hypotheses are rejected in favour of the alternative hypothesis H_2. The mean score of the total sample was significantly higher than the given cut-off point meaning that the respondents reported lower levels of stress due to task characteristics and generally fell within the normal range.

e) Physical working conditions and job equipment

For the fifth subscale of the WLQ, physical working conditions and job equipment (IWSPW) the hypotheses that were investigated were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645 (Scales have been reversed)

In this instance the subscale of physical working conditions and job equipment (IWSPW) was subjected to the z transformation formula using a mean value of 24.54, a standard deviation of 5.87, a sample size of 206, and μ_x = 19, providing a z value of 13.55. This is indicative that the null and H_1 hypotheses are rejected in favour of the alternative hypothesis H_2. The mean score of the total sample was significantly higher than the cut-off point meaning that the respondents reported lower levels of stress due to the physical working conditions and job equipment within the organization and thus were generally categorized as within the normal range.

f) Career matters

The hypotheses that were investigated for the sixth subscale of the WLQ, career matters (IWSCM) were as follows:

H_0: $\cong$ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645 (Scales have been reversed)

Next, when the subscale of career matters (IWSCM) was subjected to the z transformation formula using a mean value of 24.34, a standard deviation of 6.35, a sample size of 206, and μ_x= 22, the z value obtained was 5.29. This is indicative that the null and H_1 hypotheses were rejected in favour of the alternative hypothesis H_2. The mean score of the total sample was significantly higher than the given cut-off point of the subscale indicating that the respondents reported low levels of stress due to the career matters within the organization. The participants were generally classified as within the normal range.

g) Social matters

For the seventh subscale of the WLQ, social matters (IWSSM), the hypotheses that were investigated were as follows:

H_0: $\cong$ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645 (Scales have been reversed)

When the subscale of social matters (IWSSM) was subjected to the z transformation formula using a mean value of 24.56, a standard deviation of 4.63, a sample size of 206, and μ_x= 21, the z value was found to be 11.04. This is indicative that the null and H_1 hypotheses were rejected in favour of the alternative hypothesis H_2. The mean score of the total sample was significantly higher than the cut-off point meaning that the respondents reported low levels of stress arising from the social interactions within the organization. Once again the sample was generally classified as within the normal range.

h) Remuneration, fringe benefits and personnel policy

Finally, for the eighth subscale of the WLQ, remuneration, fringe benefits and personnel policy (IWSRF), the hypotheses that were investigated were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645 (Scales have been reversed)

When the subscale of remuneration, fringe benefits and personnel policy (IWSRF) was subjected to the z transformation formula using a mean value of 28.43, a standard deviation of 8.74, a sample size of 206, and $\mu_x = 23$, the z value obtained was 8.92. This again required that the null and H_1 hypotheses be rejected in favour of the alternative hypothesis H_2. The mean score of the total sample was significantly higher than the cut-off point of the subscale provided in the test manual meaning that the respondents reported low levels of stress arising from their concerns regarding the remuneration and the fringe benefits they receive as well as the personnel policy of the organization. The responses were generally found in the normal range.

2) Aggression in the Workplace Questionnaire

The aggression in the workplace questionnaire (AWQ) was also subjected to the z transformation formula. The mean value and standard deviation were calculated from the raw scores whereas μ was estimated as stated in paragraph 9.4.

a) Aggression in the workplace-witnessed

The three general hypotheses that were investigated for each of the subscales of the aggression in the workplace questionnaire-witnessed (AWQ) were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645

The calculations of the z-values show that both the null hypothesis and H_2 hypothesis in each case are rejected in favour of the alternative hypothesis H_1 (Table 9.1). All the minus signs indicate that the respondents witnessed significantly low levels of aggression in the workplace in all its varying forms. Furthermore the sample means in all comparisons occurred at the lower end of each subscale thus indicating low levels of witnessed aggression in the workplace.

Table 9.1: Calculations of z-values for aggression in the workplace-witnessed

Scale (Witnessed)	N	Mean	Standard deviation	Midpoint	z
Overall	205	75.58	20.69	120	-30.74*
Expressions of Hostility	205	37.27	11.57	54	-20.70*
Obstructionism	205	26.43	8.05	39	-22.34*
Overt Aggression	205	11.87	3.37	27	-64.25*

b) Aggression in the workplace-experienced

The three general hypotheses that were investigated for each of the subscales of the aggression in the workplace questionnaire-experienced (AWQ) were as follows:

H_0: $\cong 0$ if $-1.645 \leq z \leq 1.645$
H_1: < 0 if $z < -1.645$
H_2: >0 if $z > 1.645$

All the calculations of the z-values show that the null and H_2 hypotheses in each case were rejected in favour of the alternative hypothesis H_1 (Table 9.2). The mean scores of the total sample were significantly lower than the midpoints of the subscales indicating that the respondents generally experienced low levels of aggression in the workplace in its varying forms.

Table 9.2: Calculations of z-values for aggression in the workplace-experienced

Scale (Experienced)	N	Mean	Standard deviation	Midpoint	z
Overall	206	63.18	19.34	120	-42.17*
Expressions of Hostility	206	30.30	10.36	54	-32.84*
Obstructionism	205	22.49	7.98	39	-29.61*
Overt Aggression	203	10.66	2.78	27	-83.90*

3) IPAT Anxiety Scale

Each of the subscales of the IPAT Anxiety Scale was subjected to the z transformation formula. The mean value and standard deviation were calculated from the raw scores whereas μ was estimated as indicated in paragraph 9.4.

a) Factor -C

The three hypotheses for ego weakness or lack of ego strength that were investigated were as follows:

H_0: $\cong 0$ if $-1.645 \leq z \leq 1.645$
H_1: < 0 if $z < -1.645$
H_2: >0 if $z > 1.645$ (Scales have been reversed)

When factor –C was subjected to the z transformation formula using a mean value of 3.69, a standard deviation of 2.44, a midpoint of 6 and a sample size of 206, the z value obtained was –13.59. This is indicative that the null and H_2 hypotheses are rejected in favour of the alternative hypothesis H_1. The mean score of the total sample was significantly lower than the midpoint of the scale indicating that the respondents in general reported adequate levels of ego strength and therefore were not prone to ego weakness.

b) Factor L

The three hypotheses for suspiciousness or paranoid insecurity versus trust that were investigated were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645

In the next comparison factor L was subjected to the z transformation formula using a mean value of 3.36, a standard deviation of 1.92, a midpoint of 4 and a sample size of 206, the z value obtained was –4.78. This is indicative that the null and H_2 hypotheses are rejected in favour of the alternative hypothesis H_1. The mean score of the total sample was significantly lower than the midpoint of the scale indicating that the respondents did not experience significantly high levels of suspiciousness.

c) Factor O

The three hypotheses for guilt proneness versus untroubled adequacy that were investigated were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645

When factor O was subjected to the z transformation formula using a mean value of 8.24, a standard deviation of 4.18, a midpoint of 12 and a sample size of 206, the z value obtained was –12.91. This is indicative that the null and H_2 hypotheses are rejected in favour of the alternative hypothesis H_1. The mean score of the total sample was significantly lower than the midpoint of the scale indicating that the respondents in general were inclined towards untroubled adequacy.

d) Factor $-Q_3$

The three hypotheses for defective integration and lack of self-sentiment that were investigated were as follows:

H_0: ≅ 0 if $-1.645 \leq z \leq 1.645$
H_1: < 0 if $z < -1.645$
H_2: >0 if $z > 1.645$ (Scales have been reversed)

Hereafter factor $-Q_3$ was subjected to the z transformation formula using a mean value of 4.82, a standard deviation of 2.89, a midpoint of 8 and a sample size of 206, the z value obtained was –15.79. This is indicative that the null and H_2 hypotheses are rejected in favour of the alternative hypothesis H_1. The mean score of the total sample was lower than the midpoint of the scale indicating that the respondents did not experience significantly high levels of defective integration and lack of self-sentiment.

e) Factor Q_4

The three hypotheses for frustrative tension that were investigated were as follows:

H_0: ≅ 0 if $-1.645 \leq z \leq 1.645$
H_1: < 0 if $z < -1.645$
H_2: >0 if $z > 1.645$

When factor Q_4 was subjected to the z transformation formula using a mean value of 6.56, a standard deviation of 3.91, a midpoint of 10 and a sample size of 206, the z value obtained was –12.63. This is indicative that the null and H_2 hypotheses are rejected in favour of the alternative hypothesis H_1. The mean score of the total sample was significantly lower than the midpoint of the scale, thus indicating that the respondents did not experience significantly high levels of frustrative tension.

f) Score A

The three hypotheses for covert hidden anxiety that were investigated were as follows:

H_0: ≅ 0 if $-1.645 \leq z \leq 1.645$
H_1: < 0 if $z < -1.645$
H_2: >0 if $z > 1.645$

Next, when Score A was subjected to the z transformation formula using a mean value of 13.89, a standard deviation of 6.29, a midpoint of 20 and a sample size of 206, the z value obtained was –13.94. This is indicative that the null and H_2 hypotheses are rejected in favour of the alternative hypothesis H_1. The mean score of the total sample was significantly lower than the

midpoint of the scale and this indicated that the respondents did not experience significantly high levels of covert hidden anxiety.

g) Score B

The three hypotheses for overt, symptomatic, and conscious anxiety that were investigated were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645

For Score B, when subjected to the z transformation formula using a mean value of 12.80, a standard deviation of 7.04, a midpoint of 20 and a sample size of 206, the z value obtained was –14.68. This is indicative that the null and H_2 hypotheses are rejected in favour of the alternative hypothesis H_1. The mean score of the total sample was lower than the midpoint of the scale and is indicative of the respondents not experiencing any obvious levels of overt, symptomatic, and conscious anxiety.

h) Total anxiety

The three hypotheses for the total anxiety that were investigated were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645

Finally, when the total score was subjected to the z transformation formula using a mean value of 26.68, a standard deviation of 12.17, a midpoint of 40 and a sample size of 206, the z value obtained was –15.71. This is indicative that both the null and H_2 hypotheses are rejected in favour of the alternative hypothesis H_1. The mean score of the total sample was lower than the midpoint of the scale and indicates that the respondents did not experience high levels of total anxiety.

4) Beck Depression Inventory

The depression scale was subjected to the z transformation formula. The mean value and standard deviation were calculated from the raw scores whereas μ was estimated as stated in paragraph 9.4.

The three hypotheses for the Beck Depression Inventory that were investigated were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645

When the total score was subjected to the z transformation formula using a mean value of 6.93, a standard deviation of 6.57, a cut-off point of 16 and a sample size of 205, the z value obtained was –19.77. This is indicative that the null and H_2 hypotheses are rejected in favour of the alternative hypothesis H_1. The mean score of the total sample was lower than the cut-off point of the scale indicating that in general the respondents reported significantly low levels of depression.

5) Penn State Worry Questionnaire

The worry scale was subjected to the z transformation formula. The mean value and standard deviation were calculated from the raw scores whereas μ was estimated as mentioned in paragraph 9.4.

The three hypotheses for the worry scale that were investigated were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645

When the total score obtained for the worry scale was subjected to the z transformation formula using a mean value of 41.36, a standard deviation of 11.14, a midpoint of 48 and a sample size of 203, the z value obtained was –8.49. This is indicative that the null and H_2 hypotheses are rejected in favour of the alternative hypothesis H_1. The mean of the total sample was lower than the midpoint of the scale indicating that the respondents experienced significantly low levels of worry.

6) Social Problem-Solving Inventory-Revised

Each of the subscales of the Social Problem-Solving Inventory-Revised was subjected to the z transformation formula. The mean value and standard deviation were calculated from the raw scores whereas μ was estimated as indicated in paragraph 9.4.

a) Positive problem orientation

The three hypotheses for positive problem orientation that were investigated were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645

When the total score obtained for the positive problem orientation scale was subjected to the z transformation formula using a mean value of 18.23, a standard deviation of 3.28, a midpoint of 15 and a sample size of 205, the z value obtained was 14.10. This is indicative that the null and H_1 hypotheses are rejected in favour of the alternative hypothesis H_2. The mean of the total sample was higher than the midpoint of the scale indicating that the respondents generally had a high positive problem orientation.

b) Negative problem orientation

The three hypotheses for negative problem orientation that were investigated were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645

Next, when the total score for the negative problem orientation scale was subjected to the z transformation formula using a mean value of 18.48, a standard deviation of 6.24, a midpoint of 30 and a sample size of 206, the z value obtained was –26.50. This is indicative that the null and H_2 hypotheses are rejected in favour of the alternative hypothesis H_1. The mean of the total sample was lower than the midpoint of the scale meaning that the respondents generally reported significantly low levels of negative problem orientation.

c) Rational problem solving

The three hypotheses for rational problem solving that were investigated were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645

The total score for the rational problem solving scale was subjected to the z transformation formula using a mean value of 67.45, a standard deviation of 12.40, a midpoint of 60 and a sample size of 205, the z value obtained was 8.60. This is indicative that the null and H_1 hypotheses are rejected in favour of the alternative hypothesis H_2. The mean score of the total sample was higher than the midpoint of the scale indicating that the majority of respondents considered themselves as having good rational problem solving abilities.

d) Problem definition and formulation

The three hypotheses for problem definition and formulation that were investigated were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645

When the total score for the problem definition and formulation subscale was subjected to the z transformation formula using a mean value of 17.77, a standard deviation of 3.35, a midpoint of 15 and a sample size of 205, the z value obtained was 11.84. This is indicative that the null and H_1 hypotheses are rejected in favour of the alternative hypothesis H_2. The mean of the total sample was higher than the midpoint of the subscale meaning that the majority of respondents felt that they had a significant ability to define and formulate problems.

e) Generation of alternatives

The three hypotheses for generation of alternatives that were investigated were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645

When the total score for the generation of alternatives subscale was subjected to the z transformation formula using a mean value of 17.18, a standard deviation of 3.50, a midpoint of 15 and a sample size of 205, the z value obtained was 8.92. This is indicative that the null and H_1 hypotheses are rejected in favour of the alternative hypothesis H_2. The mean of the total sample was higher than the midpoint of the subscale indicating that the majority of the respondents believed they had developed a significant ability to generate alternatives to a problem.

f) Decision making

The three hypotheses for decision making that were investigated were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645

In the next case the total score of the decision making subscale was subjected to the z transformation formula using a mean value of 16.39, a standard deviation of 3.29, a midpoint of 15 and a sample size of 205, the z value obtained was 6.05. This is indicative that the null and H_1 hypotheses are rejected in favour of the alternative hypothesis H_2. The mean of the total

sample was higher than the midpoint of the subscale meaning that the majority of respondents viewed themselves as having a significant ability to make effective decisions regarding a problem.

g) Solution implementation and verification

The three hypotheses for solution implementation and verification that were investigated were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645

When the total score of the solution implementation and verification subscale was subjected to the z transformation formula using a mean value of 16.11, a standard deviation of 3.75, a midpoint of 15 and a sample size of 205, the z value obtained was 4.24. This is indicative that the null and H_1 hypotheses are rejected in favour of the alternative hypothesis H_2. The mean of the total sample was higher than the midpoint of the subscale indicating that the majority of the respondents believed that they could effectively implement and verify solutions regarding a specific problem.

h) Impulsivity/carelessness style

The three hypotheses for impulsivity/carelessness style that were investigated were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645

Next, when the total score of the impulsivity/carelessness style scale was subjected to the z transformation formula using a mean value of 18.36, a standard deviation of 5.33, a midpoint of 30 and a sample size of 205 the z value obtained was -31.27. This is indicative that the null and H_2 hypotheses are rejected in favour of the alternative hypothesis H_1. The mean of the total sample was lower than the midpoint of the scale showing that the majority of respondents did not in any significant way resort to a style of impulsivity or carelessness.

i) Avoidance style

The three hypotheses for avoidance style that were investigated were as follows:

H_0: ≅ 0 if -1.645 ≤ z ≤ 1.645
H_1: < 0 if z < -1.645
H_2: >0 if z > 1.645

When the total score for the avoidance style scale was subjected to the z transformation formula using a mean value of 12.74, a standard deviation of 4.10, a midpoint of 21 and a sample size of 205, the z value obtained was -28.85. This is indicative that the null and H_2 hypotheses are rejected in favour of the alternative hypothesis H_1. The mean of the total sample was lower than the midpoint of the scale meaning that generally the respondents seldom resorted to an avoidance style to any noticeable extent.

j) Total social problem solving

The three hypotheses for total social problem solving that were investigated were as follows:

H_0: $\cong 0$ if $-1.645 \leq z \leq 1.645$
H_1: < 0 if $z < -1.645$
H_2: >0 if $z > 1.645$

Finally, when the total score for the total social problem solving scale was subjected to the z transformation formula using a mean value of 16.44, a standard deviation of 2.48, a midpoint of 15 and a sample size of 206, the z value obtained was 8.51. This is indicative that the null and H_1 hypotheses are rejected in favour of the alternative hypothesis H_2. The mean of the total sample was higher than the midpoint of the scale indicating that the majority of respondents did have significantly high levels of total social-problem solving abilities.

9.4.2 T-test statistic

The *t*-test was calculated to determine the probability that two corresponding population means were different when comparing the mean of one group with that of another group. To achieve this, the sample means, standard deviation, and size of the samples were used using the following *t*-transformation formula:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{S_{\bar{x}_1 - \bar{x}_2}}$$

A 95% confidence level was chosen. If the *t*-value obtained from the calculation was smaller than the critical *t*-value obtained from the *t*-distribution table, then the null hypotheses was rejected in favour of the alternative hypotheses. A test for homogeneity or heterogeneity of variance was also conducted in order to make precise conclusions with regard to group differences.

9.4.2.1 Gender comparison

1) Experience of Work and Life Circumstances Questionnaire

Each of the subscales of the Experience of Work and Life Circumstances Questionnaire (WLQ) was subjected to the *t*-test. The mean value and standard deviation were calculated from the raw scores. The method used was pooled and the variances were equal.

The three general hypotheses that were investigated for each of the eight variables for gender were as follows:

H_0: $\mu_{MALE} = \mu_{FEMALE}$
H_1: $\mu_{MALE} < \mu_{FEMALE}$
H_2: $\mu_{MALE} > \mu_{FEMALE}$

When each of the subscales was subjected to the *t*-test no significant differences were found between males and females throughout (Table 9.3).

Table 9.3: *T*-test statistics for the Experience of Work and Life Circumstances Questionnaire for gender

Subscale		Gender	N	Mean	Standard deviation	*t*	Pr > |*t*|	F Value	Pr > F
Level of stress		Male	121	74.36	20.57	0.50	0.6143	1.12	0.5951
		Female	85	72.92	19.47				
Causes outside the work situation		Male	121	25.11	6.17	-0.49	0.6250	1.35	0.1343
		Female	85	25.56	7.17				
Causes within the work situation	**Organizational functioning**	Male	121	20.27	5.50	-0.12	0.9083	1.12	0.5732
		Female	85	20.36	5.82				
	Task characteristics	Male	121	50.00	7.14	-0.58	0.5636	1.03	0.8727
		Female	85	50.59	7.25				
	Physical working conditions	Male	121	25.17	5.68	1.82	0.0695	1.13	0.5368
		Female	85	23.66	6.04				
	Career matters	Male	121	24.52	5.97	0.47	0.6362	1.33	0.1518
		Female	85	24.09	6.88				
	Social matters	Male	121	24.12	4.28	-1.63	0.1042	1.39	0.0961
		Female	85	25.19	5.04				
	Remuneration; fringe benefits and personnel policy	Male	121	28.74	8.53	0.59	0.5533	1.13	0.5493
		Female	85	28.00	9.05				

This is indicative that the alternative hypotheses H_1 and H_2 are rejected in favour of the null hypothesis H_0 in each case. The difference between the mean scores for gender was insignificant meaning that the male and females respondents generally reported similar levels of stress regarding their experience of their overall levels of stress, causes outside the work situation, organizational functioning, task characteristics, physical working conditions, career matters, social matters, and remuneration, fringe benefits and personnel policy. In all the above comparisons the F test results were insignificant pointing to homogeneity of variances. The *t*-

values described a lack of significance of difference between the two genders (differences between groups) that were not in any way affected by differences within groups.

2) Aggression in the Workplace Questionnaire

The aggression in the workplace questionnaire (AWQ) was also subjected to the *t*-test. The mean values and the standard deviation were based on the raw scores.

a) Aggression in the workplace-witnessed

The three general hypotheses that were investigated for each of the four variables for gender were as follows:

H_0: $\mu_{WITMALE} = \mu_{WITFEMALE}$
H_1: $\mu_{WITMALE} < \mu_{WITFEMALE}$
H_2: $\mu_{WITMALE} > \mu_{WITFEMALE}$

The calculations of the *t*-values show that the null hypothesis H_0 is maintained in favour of the alternative hypotheses H_1 or H_2 (Table 9.4) in all four cases. One F test was significant, namely that of overt aggression. However its accompanying *t*-value was insignificant and therefore further interpretation was not necessary.

Table 9.4: *T*-test statistics for aggression in the workplace-witnessed for gender

Scale (Witnessed)	Gender	N	Mean	Standard deviation	*t*	Pr > |*t*|	F Value	Pr > F
Overall	Male	120	77.11	19.33	1.27	0.2059	1.34	0.1374
	Female	85	73.40	22.41				
Expressions of Hostility	Male	120	37.75	10.81	0.70	0.4845	1.36	0.1260
	Female	85	36.60	12.59				
Obstructionism	Male	120	27.25	7.57	1.73	0.0848	1.29	0.1983
	Female	85	25.28	8.60				
Overt Aggression	Male	120	12.12	3.68	1.25	0.2110	1.66	0.0145
	Female	85	11.52	2.86				

b) Aggression in the workplace-experienced

The three general hypotheses that were investigated for each of the four variables for gender were as follows:

H_0: $\mu_{EXPMALE} = \mu_{EXPFEMALE}$
H_1: $\mu_{EXPMALE} < \mu_{EXPFEMALE}$
H_2: $\mu_{EXPMALE} > \mu_{EXPFEMALE}$

The calculations of the t-values show that the null hypothesis is maintained (Table 9.5) in the case of three out of the four variables. Only one comparison proved significant, namely the

comparison on obstructionism (t = 2.20, p < 0.05). In this instance H_0 was rejected in favour of H_2. Males once more generally had higher scores compared to their female counterparts implying that they experienced more often than females higher levels of obstructionism (for example, failing to return phone calls or respond to memos, failing to transmit information needed by the target, etcetera). A significant F value was found for overt aggression but the accompanying t-value was not significant and therefore no further interpretation was necessary.

Table 9.5: *T*-test statistics for aggression in the workplace-experienced for gender

Scale (Experienced)	Gender	N	Mean	Standard deviation	t	Pr > |t|	F Value	Pr > F
Overall	Male	121	64.69	19.68	1.33	0.1844	1.10	0.6408
	Female	85	61.05	18.75				
Expressions of Hostility	Male	121	30.74	10.38	0.73	0.4690	1.00	0.9931
	Female	85	29.67	10.36				
Obstructionism	Male	120	23.52	7.85	2.20	0.0287*	1.04	0.8489
	Female	85	21.05	7.99				
Overt Aggression	Male	121	21.45	7.16	0.90	0.3715	1.78	0.0057
	Female	85	20.35	6.86				

3) IPAT Anxiety Scale

Each of the subscales of the IPAT Anxiety Scale was subjected to the t-test. The mean values and the standard deviations were based on the raw scores.

The three general hypotheses that were investigated for each of the eight variables for gender were as follows:

$$H_0: \mu_{IPATMALE} = \mu_{IPATFEMALE}$$
$$H_1: \mu_{IPATMALE} < \mu_{IPATFEMALE}$$
$$H_2: \mu_{IPATMALE} > \mu_{IPATFEMALE}$$

The results show that six statistically significant comparisons occurred with only Factor L, Factor -Q_3, and Score A being the exceptions (Table 9.6).

Firstly the two genders differed significantly in terms of Factor –C (t = -1.99, p< 0.05). The females, compared to the males, had a higher mean score thus indicating a trend towards having less ego strength and more ego weakness in extreme instances, thus confirming the alternative hypothesis H_1. Heterogeneity of variance was insignificant pointing to the observed differences being due to a difference between the two groups.

Factor O was the second variable where the two genders differed significantly (t = -2.06, p < 0.05). The females once more had a higher mean compared to the males indicating a greater tendency to guilt proneness and a lesser tendency towards untroubled adequacy. Once again hypothesis H_1 held. Furthermore homogeneity of variance was present in the data set.

The third comparison related to Factor Q_4 (t = -1.97, $p < 0.05$). As in the previous comparisons, females had a higher mean score than their male counterparts. Females thus when compared to males, were more prone to frustrative tension thus confirming the alternative hypothesis H_1. Homogeneity of variance once again was present.

Fourthly Score B also showed significant differences (t = -2.66, $p < 0.05$). The females had a higher score compared to that of the males, indicating that females had a greater tendency towards overt, symptomatic, and conscious anxiety than the males. The alternative hypothesis H_1 also held in this comparison. There was also an absence of heterogeneity of variance.

The final significant difference occurred in the total score (t = -2.16, $p < 0.05$). Females in this instance also had a higher mean than did the males. This indicated that the female respondents had a higher level of total anxiety than the males. Again the alternative hypothesis H_1 was confirmed. Once more the lack of heterogeneity of variance limited the comparison to differences between the two gender groups.

Table 9.6: *T*-test statistics for the IPAT Anxiety Scale for gender

Scale	Gender	N	Mean	Standard deviation	*t*	Pr > |*t*|	F Value	Pr > F
Factor -C	Male	121	3.41	2.38	-1.99	0.0481*	1.09	0.6568
	Female	85	4.09	2.48				
Factor L	Male	121	3.29	1.95	-0.67	0.5059	1.08	0.7254
	Female	85	3.47	1.88				
Factor O	Male	121	7.74	4.09	-2.06	0.0404*	1.06	0.7516
	Female	85	8.95	4.22				
Factor -Q_3	Male	121	4.60	3.08	-1.29	0.1986	1.42	0.0884
	Female	85	5.13	2.58				
Factor Q_4	Male	121	6.12	3.85	-1.97	0.0496*	1.04	0.8456
	Female	85	7.20	3.92				
Score A	Male	121	13.45	6.52	-1.20	0.2298	1.20	0.3652
	Female	85	14.52	5.94				
Score B	Male	121	11.72	6.75	-2.66	0.0085*	1.14	0.5096
	Female	85	14.33	7.20				
Total score	Male	121	25.17	12.26	-2.16	0.0323*	1.08	0.7078
	Female	85	28.85	11.79				

4) Beck Depression Inventory

The depression scale was subjected to the *t*-test. The mean values and the standard deviations were based on the raw scores.

The three general hypotheses that were investigated for depression and gender were as follows:

H_0: $\mu_{BDIMALE} = \mu_{BDIFEMALE}$
H_1: $\mu_{BDIMALE} < \mu_{BDIFEMALE}$
H_2: $\mu_{BDIMALE} > \mu_{BDIFEMALE}$

The results show that the null hypothesis H_0 is not rejected in favour of the alternative hypothesis H_1 (Table 9.7). This implies that there were no significant differences in the levels of depression between males and females. The variances of the two groups were homogenous.

Table 9.7: *T*-test statistics for the Beck Depression Inventory for gender

Scale	Gender	N	Mean	Standard deviation	*t*	Pr > |*t*|	F Value	Pr > F
Depression	Male	120	6.65	6.31	-0.74	0.4595	1.21	0.3344
	Female	85	7.34	6.94				

5) Penn State Worry Questionnaire

The Penn State Worry Questionnaire was subjected to the *t*-test. The mean values and the standard deviations were based on the raw scores.

The three general hypotheses that were investigated for worry among gender groups were as follows:

H_0: $\mu_{WORMALE} = \mu_{WORFEMALE}$
H_1: $\mu_{WORMALE} < \mu_{WORFEMALE}$
H_2: $\mu_{WORMALE} > \mu_{WORFEMALE}$

The results show that the null hypothesis is rejected in favour of the alternative hypothesis H_1 (Table 9.8). The result showed that the females had a higher mean thus indicating a greater tendency towards resorting to worry as a means of coping, thus the alternative hypothesis H_1 was confirmed. The difference between the two means was quite big. Homogeneity of variance occurred.

Table 9.8: *T*-test statistics for the Penn State Worry Questionnaire for gender

Scale	Gender	N	Mean	Standard deviation	*t*	Pr > |*t*|	F Value	Pr > F
Worry	Male	118	39.25	10.22	-3.27	0.0013*	1.32	0.1670
	Female	85	44.31	11.74				

6) Social Problem-Solving Inventory-Revised

The three general hypotheses that were investigated for each of the ten variables for gender were as follows:

H_0: $\mu_{SPSMALE} = \mu_{SPSFEMALE}$
H_1: $\mu_{SPSMALE} < \mu_{SPSFEMALE}$
H_2: $\mu_{SPSMALE} > \mu_{SPSFEMALE}$

Each of the subscales of the Social Problem-Solving Inventory-Revised was subjected to the *t*-test. The mean values and the standard deviation were based on the raw scores.

The results show that for seven of the ten variables the null hypothesis is not rejected in favour of the alternative hypotheses H_1 or H_2 (Table 9.9).

Table 9.9: *T*-test statistics for the Social Problem-Solving Inventory-Revised for gender

Scale	Gender	N	Mean	Standard deviation	*t*	Pr > |*t*|	F Value	Pr > F
Positive Problem Orientation Scale	Male	121	18.41	3.25	0.96	0.3363	1.05	0.8000
	Female	84	17.96	3.33				
Negative Problem Orientation Scale	Male	121	17.58	6.06	-2.49	0.0135*	1.08	0.6789
	Female	85	19.75	6.31				
Rational Problem Solving Scale	Male	121	68.62	12.79	1.63	0.1047	1.20	0.3802
	Female	84	65.76	11.68				
Problem Definition and Formulation Subscale	Male	121	18.08	3.53	1.63	0.1046	1.34	0.1602
	Female	84	17.31	3.05				
Generation of Alternatives Subscale	Male	121	17.59	3.58	2.01	0.0459*	1.16	0.4823
	Female	84	16.60	3.33				
Decision Making Subscale	Male	121	16.60	3.27	1.10	0.2743	1.03	0.8754
	Female	84	16.08	3.32				
Solution Implementation and Verification Subscale	Male	121	16.36	3.91	1.09	0.2764	1.25	0.2876
	Female	84	15.77	3.51				
Impulsivity/ Carelessness Style Scale	Male	121	17.91	5.25	-1.44	0.1501	1.07	0.7372
	Female	84	19.00	5.42				
Avoidance Style Scale	Male	121	12.74	4.20	0.01	0.9922	1.11	0.6200
	Female	84	12.74	3.99				
Social Problem Solving	Male	121	16.74	2.27	2.09	0.0383*	1.32	0.1680
	Female	85	16.03	2.60				

This indicates that there were no significant differences between males and females in their abilities regarding their positive problem orientation, their rational problem solving, their ability to make decisions, their ability to implement and verify solutions, their impulsivity and carelessness style, and their avoidance style. The three exceptions were found with negative problem orientation, generation of alternatives, and social problem solving ability. The two genders differed significantly in the case of negative problem orientation (t = -2.49, $p < 0.05$).

Female respondents had a higher mean value on this subscale indicating that they had a higher tendency towards a negative problem orientation, thus confirming the alternative hypothesis H_1. With regards to the generation of alternatives females had a lower mean score than their male counterparts pointing to a lesser ability to generate alternatives (t = 2.01, $p < 0.05$). The alternative hypothesis H_2 was confirmed in this case. The females also had a lower mean score than the males with respect to their overall problem solving ability (t = 2.09, $p < 0.05$). Again the alternative hypothesis H_2 was confirmed. This indicated that the females had a lesser total problem solving ability. In all three comparisons homogeneity of variance was observed.

9.4.2.2 Marital status

1) Experience of Work and Life Circumstances Questionnaire

Each of the subscales of the Experience of Work and Life Circumstances Questionnaire (WLQ) was subjected to the *t*-test. The mean values and the standard deviation were based on the raw scores.

The three general hypotheses that were investigated for each of the eight variables for marital status were as follows:

H_0: $\mu_{MARRIED} = \mu_{NON\text{-}MAR}$
H_1: $\mu_{MARRIED} < \mu_{NON\text{-}MARRIED}$
H_2: $\mu_{MARRIED} > \mu_{NON\text{-}MARRIED}$

When each of the subscales was subjected to the *t*-test no significant differences were found for seven of the eight variables regarding the two marital status groups except for causes outside the work situation (Table 9.10). This is indicative that the null hypothesis is retained at the cost of alternative hypotheses H_1 or H_2 in each case except in the case of causes outside the work situation. The difference between the mean scores for the married and non-married group was insignificant meaning that the respondents making up each group generally reported similar low levels of stress regarding their experience of stress, organizational functioning, task characteristics, physical working conditions, career matters, social matters, and remuneration, fringe benefits and personnel policy.

The single exception was stress caused by factors outside the work situation. The two marital groups differed significantly from one another (t = -2.63, $p < 0.01$). Subjects categorized as non-married had a higher mean score than the married subjects and therefore generally experienced higher levels of stress outside the workplace than their married counterparts. The alternative hypothesis H_1 was thus confirmed. The F ratio for this comparison was insignificant. The resultant homogeneity of variance limited the significance to differences between the two groups unaffected by differences within the two groups.

Table 9.10: *T*-test statistics for the Experience of Work and Life Circumstances Questionnaire for marital status

Subscale		Marital Status	N	Mean	Standard deviation	*t*	Pr > |*t*|	F Value	Pr > F
Level of stress		Married	154	73.00	19.84	-0.94	0.3459	1.11	0.6317
		Non-married	52	76.04	20.86				
Causes outside the work situation		Married	154	24.60	6.23	-2.63	0.0091*	1.35	0.1690
		Non-married	52	27.35	7.24				
Causes within the work situation	**Organizational functioning**	Married	154	20.35	5.71	0.18	0.8611	1.12	0.6626
		Non-married	52	20.19	5.41				
	Task characteristics	Married	154	50.23	7.36	-0.05	0.9577	1.22	0.4171
		Non-married	52	50.29	6.66				
	Physical working conditions	Married	154	24.60	5.94	0.23	0.8217	1.09	0.7287
		Non-married	52	24.39	5.69				
	Career matters	Married	154	24.44	6.46	0.35	0.7261	1.13	0.6274
		Non-married	52	24.08	6.08				
	Social matters	Married	154	24.73	4.78	0.88	0.3820	1.35	0.2212
		Non-married	52	25.08	4.12				
	Remuneration, fringe benefits and personnel policy	Married	154	28.55	8.96	0.32	0.7494	1.22	0.4244
		Non-married	52	28.10	8.12				

2) Aggression in the Workplace Questionnaire

The aggression in the workplace questionnaire (AWQ) was subjected to the *t*-test. The mean values and the standard deviation were based on the raw scores.

a) Aggression in the workplace-witnessed

The three general hypotheses that were investigated for each of the fifteen variables for marital status were as follows:

H_0: $\mu_{WITMARRIED} = \mu_{WITNON\text{-}MARRIED}$
H_1: $\mu_{WITMARRIED} < \mu_{WITNON\text{-}MARRIED}$
H_2: $\mu_{WITMARRIED} > \mu_{WITNON\text{-}MARRIED}$

The calculations of the *t*-values show that the null hypothesis is retained at the cost of the alternative hypotheses H_1 and H_2 (Table 9.11) for all four variables. The respondents belonging to either the married or the non-married group did not witness any significant differences in their levels of aggression no matter in which form. A significant F value was found for overt aggression but the accompanying *t*-value was not significant and therefore no further interpretation was necessary.

Table 9.11: *T*-test statistics for Aggression in the workplace-witnessed for marital status

Scale (Witnessed)	Marital Status	N	Mean	Standard deviation	t	Pr > |t|	F Value	Pr > F
Overall	Married	153	76.20	21.13	0.74	0.4628	1.18	0.4976
	Non-married	52	73.75	19.44				
Expressions of Hostility	Married	153	37.39	11.68	0.25	0.8013	1.06	0.8178
	Non-married	52	36.92	11.33				
Obstructionism	Married	153	26.75	8.22	0.95	0.3443	1.19	0.4895
	Non-married	52	25.52	7.55				
Overt Aggression	Married	153	12.06	3.61	1.39	0.1658	2.13	0.0024
	Non-married	52	11.31	2.48				

b) Aggression in the workplace-experienced

The general hypothesis that was investigated was as follows:

H_0: $\mu_{EXPMARRIED} = \mu_{EXPNON\text{-}MARRIED}$
H_1: $\mu_{EXPMARRIED} < \mu_{EXPNON\text{-}MARRIED}$
H_2: $\mu_{EXPMARRIED} > \mu_{EXPNON\text{-}MARRIED}$

The calculations of the *t*-values show that the null hypothesis is retained at the cost of alternative hypotheses H_1 and H_2 (Table 9.12) for all four variables. The respondents belonging to either the married or the non-married group did not experience any differences in the levels of aggression no matter in what form. A significant F value was found for overt aggression but the accompanying *t*-value was not significant and therefore no further interpretation was deemed necessary.

Table 9.12: *T*-test statistics for Aggression in the workplace-experienced for marital status

Scale (Experienced)	Marital Status	N	Mean	Standard deviation	*t*	Pr > |t|	F Value	Pr > F
Overall	Married	154	63.12	20.38	-0.08	0.9380	1.61	0.0506
	Non-married	52	63.37	16.06				
Expressions of Hostility	Married	154	33.71	11.41	-0.44	0.6590	1.45	0.1241
	Non-married	52	34.79	9.77				
Obstructionism	Married	151	30.00	8.97	0.21	0.8315	1.13	0.6232
	Non-married	52	28.58	6.92				
Overt Aggression	Married	154	20.90	7.30	1.30	0.1966	4.74	<.0001
	Non-married	52	21.27	6.29				

3) IPAT Anxiety Scale

Each of the subscales of the IPAT Anxiety Scale was subjected to the *t*-test. The mean values and the standard deviation were based on the raw scores.

The three general hypotheses that were investigated for each of the eight variables for marital status were as follows:

H_0: $\mu_{IPATMARRIED} = \mu_{IPATNON\text{-}MARRIED}$
H_1: $\mu_{IPATMARRIED} < \mu_{IPATNON\text{-}MARRIED}$
H_2: $\mu_{IPATMARRIED} > \mu_{IPATNON\text{-}MARRIED}$

The results show that five statistically significant comparisons occurred with Factor L, Factor Q_4, and Score A being the exceptions (Table 9.13).

Firstly the two marital status groups differed significantly in terms of Factor –C (t = -2.66, $p < 0.01$). Respondents categorized as non-married had a higher mean score than the married group, thus indicating a trend towards having slightly less ego strength and somewhat more ego weakness in general. The alternative hypothesis H_1 was thus confirmed. Heterogeneity of variance did occur implying that the observed differences were not only due to a difference between the two groups, but also due to the significant difference in dispersion of score around the two means. This result implied that there were differences between the two groups as well as within the groups themselves.

Factor O was the second variable where the two marital status groups differed significantly (t = -2.26, $p < 0.05$). The subjects falling into the category non-married once more had a higher mean compared to the married group indicating a greater tendency to guilt proneness and a lesser tendency towards untroubled adequacy again confirming the alternative hypothesis H_1. Once again homogeneity of variance was present in the data set.

The third comparison related to Factor -Q_3 (t = -1.97, $p < 0.05$). As in the previous comparisons, the non-married group had a higher mean score than the married group. The respondents of the non-married group tended towards more defective integration and lack of self-sentiment when compared to those in the married group. Homogeneity of variance once again was present.

Fourthly Score B also showed significant differences (t = -2.66, $p < 0.01$). The subjects that made up the non-married group had a somewhat higher mean score compared to that of the subjects of the married group, indicating that the non-married group members had a greater tendency towards overt, symptomatic, and conscious anxiety thus confirming the alternative

hypothesis H_1. The alternative hypothesis H_1 held once more. Again there was an absence of heterogeneity of variance.

The final significant difference occurred in the total score (t = -2.60, p < 0.05). Respondents comprising the non-married group also had a higher mean score than did the respondents in the married group. This indicated that the members of the non-married group had a higher level of total anxiety than the members of the married group. Again the alternative hypothesis H_1 was confirmed. Once more the lack of heterogeneity of variance limited the comparison to differences between the two marital status groups.

Table 9.13: *T*-test statistics for the IPAT Anxiety Scale for marital status

Scale	Marital Status	N	Mean	Standard deviation	*t*	Pr > |*t*|	F Value	Pr > F
Factor -C	Married	154	3.44	2.22	-2.66	0.0083*	1.68	0.0164
	Non-married	52	4.46	2.88				
Factor L	Married	154	3.31	1.88	-0.76	0.4501	1.17	0.4736
	Non-married	52	3.54	2.03				
Factor O	Married	154	7.86	4.12	-2.26	0.0246*	1.03	0.8616
	Non-married	52	9.37	4.18				
Factor -Q_3	Married	154	4.53	2.87	-2.49	0.0134*	1.06	0.8394
	Non-married	52	5.67	2.79				
Factor Q_4	Married	154	6.29	3.74	-1.76	0.0794	1.32	0.2003
	Non-married	52	7.38	4.30				
Score A	Married	154	13.40	6.06	-1.92	0.0563	1.25	0.3046
	Non-married	52	15.33	6.78				
Score B	Married	154	12.02	6.57	-2.77	0.0061*	1.45	0.0874
	Non-married	52	15.10	7.91				
Total score	Married	154	25.42	11.52	-2.60	0.0101*	1.35	0.1717
	Non-married	52	30.42	13.37				

4) Beck Depression Inventory

The depression scale was subjected to the *t*-test. The mean values and the standard deviations were based on the raw scores.

The three general hypotheses that were investigated for the variable depression for marital status were as follows:

H_0: $\mu_{BDIMARRIED} = \mu_{BDINON\text{-}MARRIED}$
H_1: $\mu_{BDIMARRIED} < \mu_{BDINON\text{-}MARRIED}$
H_2: $\mu_{BDIMARRIED} > \mu_{BDINON\text{-}MARRIED}$

The results show that the null hypothesis is not rejected in favour of the alternative hypothesis H_1 or H_2 (Table 9.14). This implies that there were no significant differences in the levels of depression experienced between the married and the non-married groups.

Table 9.14: *T*-test statistics for the Beck Depression Inventory for marital status

Scale	Marital Status	N	Mean	Standard deviation	*t*	Pr > |*t*|	F Value	Pr > F
Depression	Married	154	6.44	6.18	-1.89	0.0607	1.48	0.0741
	Non-married	51	8.43	7.51				

5) Penn State Worry Questionnaire

The Penn State Worry Questionnaire was subjected to the *t*-test. The mean values and the standard deviations were based on the raw scores.

The three general hypotheses that were investigated for the variable worry for marital status were as follows:

H_0: $\mu_{WORMARRIED} = \mu_{WORNON\text{-}MARRIED}$
H_1: $\mu_{WORMARRIED} < \mu_{WORNON\text{-}MARRIED}$
H_2: $\mu_{WORMARRIED} > \mu_{WORNON\text{-}MARRIED}$

The results show that the null hypothesis is rejected in favour of the alternative hypothesis H_1 (Table 9.15). The married group had a lower mean score than the non-married group, which implied that the former experienced lower levels of worry than the latter.

Table 9.15: *T*-test statistics for the Penn State Worry Questionnaire for marital status

Scale	Marital Status	N	Mean	Standard deviation	*t*	Pr > |*t*|	F Value	Pr > F
Worry	Married	152	40.28	10.98	-2.42	0.0166*	1.02	0.8855
	Non-married	51	44.59	11.11				

6) Social Problem-Solving Inventory-Revised

The three general hypotheses that were investigated for each of the ten variables for marital status were as follows:

H_0: $\mu_{SPMARRIED} = \mu_{SPFNON\text{-}MARRIED}$
H_1: $\mu_{SPMARRIED} < \mu_{SPSNON\text{-}MARRIED}$
H_2: $\mu_{SPMARRIED} > \mu_{SPSNON\text{-}MARRIED}$

Each of the subscales of the Social Problem-Solving Inventory-Revised was subjected to the *t*-test. The mean values and the standard deviation were based on the raw scores.

The results show that in the case of three of the ten subscales the null hypothesis is retained at the expense of the alternative hypothesis H_1 or H_2 (Table 9.16). This implies that there were no

significant differences between the married and non-married groups regarding their abilities to generate alternatives, make decisions, and implementing and verifying solutions. A significant difference did exist between the two groups with respect to the remaining seven variables, namely positive problem orientation, negative problem orientation, rational problem solving, problem definition and formulation, impulsivity and carelessness style, avoidance style, and social problem solving.

With regard to the first variable, positive problem orientation a significant difference was delineated ($t = 2.12$, $p < 0.05$). The mean score of the married subjects was found to be higher than that of the non-married group implying that the married subjects had more of a positive problem orientation than their unmarried and divorced counterparts. The alternative hypothesis H_2 was confirmed. Homogeneity of variance was present.

The second variable that was significant was negative problem orientation ($t = -3.72$, $p < 0.01$). In this case the non-married group had a higher mean score than the married subjects. The members of the former group tended to resort more to negative problem orientation than those of the latter group. The alternative hypothesis H_1 held in this case. Once again homogeneity of variance was found.

The third significant difference was found with the variable rational problem solving ($t = 2.01$, $p < 0.05$). Married subjects had a higher mean score than the non-married group. Married subjects were thus more inclined to use this intellectual approach, thus confirming the alternative hypothesis H_2. Heterogeneity of variance was not present.

The fourth comparison that showed a significant difference was with the variable problem definition and formulation ($t = 2.17$, $p< 0.05$). Married subjects had a higher mean score than their non-married counterparts implying that the former performed better by being more inclined to use problem definition and formulation than the latter. The alternative hypothesis H_2 was upheld again. In this case heterogeneity of variance did occur. Besides differences between groups differences within groups also occurred thus confounding any clear conclusion.

In the fifth place the variable impulsivity/carelessness style was found to be significant ($t = -2.96$, $p < 0.01$). In this case the respondents that fell into the non-married group had a higher mean score than the married respondents indicating that first mentioned group tended to have a more impulsive and careless approach to dealing with problems than the second mentioned group. The alternative hypothesis H_1 was applicable in this case. Once again heterogeneity of variance did not occur.

The sixth variable, namely avoidance style also showed significant differences (t = -2.43, p < 0.05). The non-married group once again had a higher mean score than the married group indicating that the members of the first group were more likely to resort to an avoidance style when dealing with problem situations, once more confirming the alternative hypothesis H_1. Again homogeneity of variance occurred.

Finally, a significant difference was observed with regard to the variable social problem solving (t = 3.04, p < 0.01). The married subjects had a higher mean score than the non-married group. The latter category was less effective in their overall approach to social problem solving. In this instance the alternative hypothesis H_2 held. Once again homogeneity of variance occurred.

Table 9.16: *T*-test statistics for the Social Problem-Solving Inventory-Revised for marital status

Scale	Marital Status	N	Mean	Standard deviation	*t*	Pr > |*t*|	F Value	Pr > F
Positive Problem Orientation Scale	Married	153	18.51	3.32	2.12	0.0353*	1.20	0.4528
	Non-married	52	17.40	3.03				
Negative Problem Orientation Scale	Married	154	17.56	6.05	-3.72	0.0003*	1.00	0.9655
	Non-married	52	21.17	6.06				
Rational Problem Solving Scale	Married	153	68.46	12.90	2.01	0.0454*	1.56	0.0681
	Non-married	52	64.48	10.33				
Problem Definition and Formulation Subscale	Married	153	18.06	3.58	2.17	0.0315*	2.20	0.0016
	Non-married	52	16.90	2.41				
Generation of Alternatives Subscale	Married	153	17.45	3.58	1.91	0.0577	1.29	0.2992
	Non-married	52	16.38	3.16				
Decision Making Subscale	Married	153	16.64	3.33	1.92	0.0565	1.16	0.5467
	Non-married	52	15.63	3.09				
Solution Implementation and Verification Subscale	Married	153	16.31	3.81	1.25	0.2144	1.15	0.5749
	Non-married	52	15.56	3.56				
Impulsivity/ Carelessness Style Scale	Married	153	17.73	5.11	-2.96	0.0034*	1.20	0.4010
	Non-married	52	20.21	5.59				
Avoidance Style Scale	Married	153	12.34	4.02	-2.43	0.0158*	1.06	0.7642
	Non-married	52	13.92	4.14				
Social Problem Solving	Married	154	16.74	2.45	3.04	0.0027*	1.33	0.2352
	Non-married	52	15.58	2.13				

9.4.3 Analysis of variance

A General Linear Model was run with MANOVA options and Scheffé tests were calculated for four class variables, i.e., the four types of organization groupings, the five qualifications levels, the three position levels, and the four age groups.

A 95% confidence level was chosen based on Type 111 SS calculations.

Scheffé tests were calculated using raw scores with the following formula:

$$F'_{ab} = \frac{(\bar{x}_a - \bar{x}_b)^2}{\frac{sw^2}{n_1} + \frac{sw^2}{n_2}}$$

9.4.3.1 Experience of Work and Life Circumstances Questionnaire

Each of the subscales of the Experience of Work and Life Circumstances Questionnaire was subjected to the General Linear Model with ANOVA option. Scheffé tests were calculated from the raw scores as described in paragraph 9.4.3.

1) Level of stress

The first comparison involved the variable level of stress (LOS). The analysis of variance is given in Table 9.17.

Table 9.17: Analysis of variance for level of stress

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	22241.75	353.04	0.87	0.7324
Error	140	56881.48	406.30		
Corrected Total	203	79123.23			

R-Square	Coeff Var	Root MSE	LOS Mean
0.28	27.46	20.16	73.41

Source	DF	Type 111 SS	Mean Square	F Value	Pr > F
Organization	3	533.60	177.87	0.44	0.7263
Qualification	4	1400.69	350.17	0.86	0.4886
Position	2	445.05	222.52	0.55	0.5795
Age	3	1131.22	377.07	0.93	0.4290
Org*Qual	10	5892.00	589.20	1.45	0.1646
Org*Pos	6	1627.61	271.27	0.67	0.6759
Org*Age	9	2480.16	275.57	0.68	0.7276
Qual*Pos	8	1564.46	195.56	0.48	0.8678
Qual*Age	12	5034.76	419.56	1.03	0.4226
Pos*Age	6	556.47	92.75	0.23	0.9669

The F value of 0.87 was not significant ($p > 0.05$), which was indicative that none of the subgroups differed in terms of the dependent variable level of stress. Furthermore no significant one-way or two-way interactions occurred in the comparison.

2) Causes outside the work situation

The second comparison involved the variable causes outside the work situation (OWS). The analysis of variance is given in Table 9.18. The F value 1.23 was once again not significant ($p > 0.05$), which was indicative that none of the subgroups differed in terms of the dependent variable causes outside the work situation. However only one significant interaction could be delineated, namely type of organization grouping with qualification groupings. Further analysis of this interaction was deemed unnecessary as the overall F value of 1.23 was insignificant.

Table 9.18: Analysis of variance for causes outside the work situation

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	2981.80	47.33	1.23	0.1609
Error	140	5399.12	38.57		
Corrected Total	203	8380.92			

R-Square	Coeff Var	Root MSE	OWS Mean
0.36	24.66	6.21	25.19

Source	DF	Type 111 SS	Mean Square	F Value	Pr > F
Organization	3	250.53	83.51	2.17	0.0948
Qualification	4	241.71	60.43	1.57	0.1865
Position	2	127.52	63.76	1.65	0.1951
Age	3	152.96	50.99	1.32	0.2697
Org*Qual	10	746.58	74.66	1.94*	0.0451
Org*Pos	6	140.93	23.49	0.61	0.7228
Org*Age	9	179.82	19.98	0.52	0.8596
Qual*Pos	8	161.26	20.16	0.52	0.8379
Qual*Age	12	631.38	52.62	1.36	0.1900
Pos*Age	6	79.53	13.26	0.34	0.9125

3) Organizational functioning

The third comparison involved the variable of organizational functioning (IWSOF). The analysis of variance is given in Table 9.19. The F value of 1.50 was significant ($p < 0.05$). Thus it is expected that one or more of the subgroups would differ regarding their experience of stress due to organizational functioning. One significant two-way interaction could be delineated, namely type of organization grouping with qualification level (Table 9.20). No significant differences regarding the qualification levels, position levels, and different age categories could be found.

Table 9.19: Analysis of variance for organizational functioning

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	2509.47	39.83	1.50*	0.0256
Error	140	3722.12	26.59		
Corrected Total	203	6231.58			

R-Square	Coeff Var	Root MSE	IWSOF Mean
0.40	25.25	5.16	20.42

Source	DF	Type 111 SS	Mean Square	F Value	Pr > F
Organization	3	207.46	69.15	2.60	0.0545
Qualification	4	125.34	31.33	1.18	0.3229
Position	2	92.01	46.00	1.73	0.1810
Age	3	65.81	21.94	0.83	0.4821
Org*Qual	10	540.06	54.01	2.03*	0.0343
Org*Pos	6	234.06	39.01	1.47	0.1937
Org*Age	9	417.27	46.36	1.74	0.0845
Qual*Pos	8	163.41	20.43	0.77	0.6312
Qual*Age	12	503.42	41.95	1.58	0.1046
Pos*Age	6	198.56	33.09	1.24	0.2872

A series of Scheffé tests were carried out where the four types of organization groupings were paired-off with the five qualification groupings. Each of the organization-qualification pairs was then compared to every other pair to determine if a significant difference did exist or not. For all of the comparisons it was found that F_{crit} at $p < 0.05$ was equal to 3.96 and $p < 0.01$ was equal to 4.41. Most significantly respondents that worked for academic/auxiliary service organizations having Masters or Doctors degrees differed significantly from respondents found within thirteen different organization-qualification combinations, namely financial organizations and who had a Grade 12 or less ($F' = 24.15$, $p < 0.01$, *df* = 63 and 140), financial organizations with Diplomas ($F' = 11.39$, $p < 0.01$, *df* = 63 and 140), financial organizations with Bachelors degrees ($F' = 10.50$, $p < 0.01$, *df* = 63 and 140), financial organizations with Honours and equivalent degrees ($F' = 4.02$, $p < 0.05$, *df* = 63 and 140), production/services organizations with Grade 12 or less ($F' = 8.21$, $p < 0.01$, *df* = 63 and 140), production/services organizations with Diplomas ($F' = 25.14$, $p < 0.01$, *df* = 63 and 140), production/services organizations with Bachelors degrees ($F' = 5.44$, $p < 0.01$, *df* = 63 and 140), production/services organizations with Honours and equivalent degrees with ($F' = 15.83$, $p < 0.01$, *df* = 63 and 140), production/services organizations with Masters or Doctoral degrees ($F' = 4.89$, $p < 0.01$, *df* = 63 and 140), research and development organizations with Diplomas ($F' = 6.07$, $p < 0.01$, *df* = 63 and 140), research and development organizations with Honours and equivalent degrees ($F' = 5.02$, $p < 0.01$, *df* = 63 and 140), research and development organizations with Masters or Doctoral degrees ($F' = 9.91$, $p < 0.01$, *df* = 63 and 140), and academic/auxiliary services organizations with Honours and equivalent degrees ($F' = 16.46$, $p < 0.01$, *df* = 63 and 140). In all of the above comparisons the mean score for the subjects in the academic/auxiliary services organizations with Masters or Doctoral degrees were significantly lower than for any of the thirteen organization-qualification

combinations implying that the subjects who had a Masters or Doctoral degree working in an academic/auxiliary services environment experienced organizational functioning as more problematic than subjects in any of the other combinations.

The second comparison involved subjects working in production/services organizations with Diplomas, which differed significantly from four organization-qualification combinations of which one involving subjects working in academic/auxiliary services organizations with a Masters or Doctoral degree has been reported previously. The remaining three included subjects working in research and development organizations with a Masters or Doctoral degree ($F' = 7.19$, $p < 0.01$, $df = 63$ and 140), in academic/auxiliary services organizations with a Diploma a ($F' = 6.85$, $p < 0.01$, $df = 63$ and 140), and a Bachelors Degree ($F' = 4.39$, $p < 0.05$, $df = 63$ and 140). The mean score of the former was significantly higher than for the latter groups indicating that subjects working in an production/services environment with a Diploma degree experienced organizational functioning as less problematic than those working in research and development environments with a Grade 12 or lower, a Diploma, a Bachelors and a Masters or Doctoral degree.

Another two significant comparisons were found. The first of these comparisons involved respondents working in production/services organizations with Honours or equivalent degrees, which differed significantly from subjects found in research and development organizations with Masters or Doctoral degrees ($F' = 4.22$, $p < 0.01$, $df = 63$ and 140) and subjects found in academic/auxiliary services organizations with a Diploma ($F' = 5.02$, $p < 0.01$, $df = 63$ and 140). In the comparison the mean score for the subjects that worked in production/services with Honours or equivalent degrees was significantly higher than for the subjects working in research and development organizations with Masters or Doctoral degrees and those working in academic/auxiliary services organizations which was indicative that the former experienced organization functioning as less problematic than the latter. The second comparison involved subjects that worked for financial organizations with Honours and equivalent degrees who differed significantly from production/services organizations with Diplomas ($F' = 4.87$, $p < 0.05$, $df = 63$ and 140). The respondents with an Honours or equivalent degree working for a financial organization had a lower mean average than the respondents with Diplomas working for the production/services organizations indicating that the former experienced organizational functioning as more problematic compared to the latter.

Table 9.20: Mean values for organizational functioning by organization and qualification grouping

Qualification Group	Type of Organization Grouping							
	Financial		Prod/Serv		R&D		Acad/Aux Services	
	Mean	N	Mean	N	Mean	N	Mean	N
Gr 1	21.82	39	20.00	14	-	-	-	-
Gr 2	22.13	8	23.86	14	21.20	5	17.88	8
Gr 3	23.75	4	19.80	8	19.20	5	18.86	7
Gr 4	19.00	9	23.86	7	22.00	3	22.14	14
Gr 5	-	-	19.86	7	19.45	33	14.85	20

4) Task characteristics

The fourth comparison involved the variable of task characteristics (IWSTC). The analysis of variance is given inTable 9.21). The F value of 1.49 was significant ($p < 0.05$). Significant differences were found for types of organization groupings and significant two-way interactions were found for type of organization grouping with qualification levels (Table 9.22), type of organization grouping with position level (Table 9.23), and type of organization grouping with age groupings (Table 9.24).

Table 9.21: Analysis of variance for task characteristics

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	4081.86	64.79	1.49*	0.0267
Error	140	6077.56	43.41		
Corrected Total	203	10159.43			

R-Square	Coeff Var	Root MSE	IWSTC Mean
0.40	13.08	6.59	50.37

Source	DF	Type 111 SS	Mean Square	F Value	Pr > F
Organization	3	364.20	121.40	2.80*	0.0425
Qualification	4	176.31	44.08	1.02	0.4017
Position	2	9.34	4.67	0.11	0.8981
Age	3	150.66	50.22	1.16	0.3286
Org*Qual	10	931.59	93.16	2.15*	0.0247
Org*Pos	6	642.14	107.02	2.47*	0.0269
Org*Age	9	960.52	106.72	2.46*	0.0124
Qual*Pos	8	142.30	17.79	0.41	0.9135
Qual*Age	12	928.73	77.39	1.78	0.0565
Pos*Age	6	194.17	32.36	0.75	0.6140

A series of Scheffé tests were carried out where the four types of organization groupings were paired-off two at a time. Not one of the six comparisons showed any significant differences regarding the respondents' perception of task characteristics when F_{crit} at $p < 0.05$ was equal to 3.96 and $p< 0.01$ was equal to 4.41. The studentized range test was also applied to this one-way analyses and the results showed that the research and development group differed

significantly from the financial group (Q = 9.04 > Q =4.76, α = 0.05), the production/services group (Q = 9.04 > Q = 4.76, α = 0.05), as well as the academic/auxiliary services group (Q = 7.20 > Q = 4.76, α = 0.05). In these comparisons the mean score for subjects working in research and development organizations was higher than for subjects working in financial, production/services, and academic/auxiliary organizations implying that the former experienced task characteristics as more problematic than the latter.

Another series of Scheffé tests were carried out where the four types of organization groupings were paired-off with the five qualification groupings. Each of the organization-qualification pairs was then compared to every other pair to determine if a significant difference did exist or not. For all of the comparisons it was found that F_{crit} at $p < 0.05$ was equal to 3.96 and $p < 0.01$ was equal to 4.41. Most significantly respondents that worked for research and development organizations with Diplomas differed significantly from nine other organization-qualification combinations, namely financial organizations with Grade 12 or lower (F' = 4.06, $p < 0.05$, *df* = 63 and 140), financial organizations with Diplomas (F' = 6.22, $p < 0.01$, *df* = 63 and 140), financial organizations with Bachelors degrees (F' = 5.12, $p < 0.01$, *df* = 63 and 140), financial organizations with Honours and equivalent degrees (F' = 6.29, $p < 0.01$, *df* = 63 and 140), production/services organizations with Grade 12 or less (F' = 6.34, $p < 0.01$, *df* = 63 and 140), production/services organizations with Bachelors degrees (F' = 5.74, $p < 0.01$, *df* = 63 and 140), production/services organizations with Masters or Doctoral degrees (F' = 5.61, $p < 0.01$, *df* = 63 and 140), academic/auxiliary services organizations with Diplomas (F' = 6.22, $p < 0.01$, *df* = 63 and 140), academic/auxiliary services organizations with Bachelors degrees (F' = 4.15, $p < 0.05$, *df* = 63 and 140), and academic/auxiliary services organizations with Masters or Doctoral degrees (F' = 6.97, $p < 0.01$, *df* = 63 and 140). In all of the above comparisons the mean score for subjects with Diplomas working for research and development organizations was significantly higher than for the nine organization-qualification combinations implying that the former found task characteristics less problematic than those in the latter groupings.

Further differences were found for subjects with academic/auxiliary services organizations with Honours or equivalent degrees with five other organization-qualification combinations, namely financial organizations with Diplomas (F' = 4.04, $p < 0.05$, *df* = 63 and 140), financial organizations with Honours degrees (F' = 4.13, $p < 0.05$, *df* = 63 and 140), production/services organizations with Grade 12 or lower (F' = 4.26, $p < 0.05$, *df* = 63 and 140), academic/auxiliary services organizations with Diplomas (F' = 4.04, $p < 0.05$, *df* = 63 and 140), and academic/auxiliary services organizations with Masters or Doctoral degrees (F' = 5.13, $p < 0.01$, *df* = 63 and 140). The mean score for the respondents with and Honours degree found in an academic/auxiliary services environment was higher than for any of the comparative

combinations. This result indicated that the former respondents found task characteristics less problematic than the latter groupings.

Table 9.22: Mean values for task characteristics by organization and qualification grouping

Qualification Group	Type of Organization Grouping							
	Financial		Prod/Serv		R&D		Acad/Aux Services	
	Mean	N	Mean	N	Mean	N	Mean	N
Gr 1	50.69	39	48.36	14	-	-	-	-
Gr 2	47.63	8	52.86	14	57.00	5	47.63	8
Gr 3	47.00	4	48.00	8	53.80	5	49.14	7
Gr 4	47.78	9	50.57	7	49.67	3	53.50	14
Gr 5	-	-	47.86	7	51.21	3	48.30	20

Another series of Scheffé tests were carried out where the four types of organization groupings were paired-off with the three position levels. Each of the organization-position level pairs was then compared to every other pair to determine if a significant difference between them did exist or not. For all of the comparisons it was found that F_{crit} at $p < 0.05$ was equal to 3.96 and $p < 0.01$ was equal to 4.41. Most significantly respondents that worked as specialist staff in research and development organizations differed significantly from ten other organization-position level combinations, namely in senior management in financial organizations ($F' = 4.05$, $p < 0.05$, *df* = 63 and 140), in middle management in financial organizations ($F' = 5.40$, $p < 0.01$, *df* = 63 and 140), among specialist staff in financial organizations ($F' = 13.36$, $p < 0.01$, *df* = 63 and 140), in senior management in production/services organizations ($F' = 5.42$, $p < 0.01$, *df* = 63 and 140), in middle management in production/services organizations ($F' = 4.31$, $p < 0.05$, *df* = 63 and 140), among specialist staff in production/services organizations ($F' = 4.67$, $p < 0.05$, *df* = 63 and 140), in senior management in research and development organizations ($F' = 8.47$, $p < 0.01$, *df* = 63 and 140), in middle management in research and development organizations ($F' = 9.26$, $p < 0.01$, *df* = 63 and 140), in senior management in academic/auxiliary services organizations ($F' = 7.47$, $p < 0.01$, *df* = 63 and 140), and among specialist staff in academic/auxiliary services organizations ($F' = 7.48$, $p < 0.01$, *df* = 63 and 140). In all of the above comparisons the mean value for subjects that worked as specialist staff in research and development organizations was significantly lower than any of the comparative organization-position level combinations. Thus the former subjects experienced task characteristics as more problematic than the subjects of the latter combinations.

Further subjects working in middle management in academic/auxiliary services organizations differed significantly from five organization-position level combinations, namely as specialist staff in financial organizations ($F' = 14.96$, $p < 0.01$, *df* = 63 and 140), in senior management in research and development organizations ($F' = 9.39$, $p < 0.01$, *df* = 63 and 140), middle management in research and development organizations ($F' = 11.75$, $p < 0.01$, *df* = 63 and

140), in senior management in academic/auxiliary services organizations (F' = 7.17, p < 0.01, *df* = 63 and 140), and as specialist staff in academic/auxiliary services organizations (F' = 7.08, p < 0.01, *df* = 63 and 140). Once again the mean score of respondents working in middle management in academic/auxiliary services organizations was significantly lower than for any of the comparison organization-position level combinations implying that the former experienced task characteristics as more problematic than the latter combinations.

Next subjects working in senior management for financial organizations differed significantly from two organization-position level combinations, namely senior management in research and development organizations (F' = 4.98, p < 0.01, *df* = 63 and 140) and middle management in research and development organizations (F' = 7.06, p < 0.01, *df* = 63 and 140). In both cases the mean value for subjects working in senior management for financial organizations was significantly lower than for the two comparative organization-position level combinations implying that the former found task characteristics more problematic than the latter.

Finally subjects working as specialist staff in financial organizations differed significantly from those subjects working in senior management in production/services organizations (F' = 6.18, p < 0.01, *df* = 63 and 140), as well in middle management in production/services organizations (F' = 6.18, p < 0.01, *df* = 63 and 140). In either case the mean score for subjects working as specialist staff in financial organizations was higher than for the two comparative organization-position level combinations meaning that the former experienced task characteristics as less problematic than the latter combinations.

Table 9.23: Mean values for task characteristics by organization grouping and position level

Position Level	Type of Organization Grouping							
	Financial		Prod/Serv		R&D		Acad/Aux Services	
	Mean	N	Mean	N	Mean	N	Mean	N
Senior Mangement	48.57	46	50.14	21	52.58	19	52.00	16
Middle Management	51.50	6	49.50	12	52.92	25	45.94	18
Specialist Staff	57.29	7	49.59	17	40.67	3	52.07	15

A further series of Scheffé tests were carried out where the four types of organization groupings were paired-off with the four age groups. Each of the organization-age group pairs was then compared to every other pair to determine if a significant difference between them did exist or not. For all of the comparisons it was found that F_{crit} at p < 0.05 was equal to 3.96 and p < 0.01 was equal to 4.41. Most significantly respondents that were between 30 and 39 years of age and worked in academic/auxiliary services organizations differed significantly from eight other

organization-age group combinations, namely between 20 and 29 years of age in financial organizations (F' = 4.09, $p < 0.05$, *df* = 63 and 140), between 30 and 39 years of age in financial organizations (F' = 3.99, $p < 0.05$, *df* = 63 and 140), between 30 and 39 years of age in production/services organizations (F' = 4.21, $p < 0.05$, *df* = 63 and 140), 50 years of age and older in production/services organizations (F' = 5.42, $p < 0.01$, *df* = 63 and 140), between 30 and 39 years of age in research and development organizations (F' = 4.39, $p < 0.05$, *df* = 63 and 140), between 40 and 49 years of age in research and development organizations (F' = 4.93, $p < 0.01$, *df* = 63 and 140), 50 years of age and older in research and development organizations (F' = 8.68, $p < 0.01$, *df* = 63 and 140), and 50 years of age older and in academic/auxiliary services organizations (F' = 6.22, $p < 0.01$, *df* = 63 and 140). In all of the above comparisons the mean value for subjects between 30 and 39 years of age working in an academic/auxiliary services environment was significantly lower than any of the comparative organization-age group combinations. Thus the former subjects experienced task characteristics as more problematic than the subjects of the latter combinations.

Another significant comparison similar to the above was found for respondents that were 50 years of age and older and worked in financial organizations, which differed significantly from seven other organization-age group combinations, namely between 20 and 29 years of age in financial organizations (F' = 4.25, $p < 0.05$, *df* = 63 and 140), between 30 and 39 years of age in production/services organizations (F' = 4.03, $p < 0.05$, *df* = 63 and 140), 50 years of age and older and in production/services organizations (F' = 5.35, $p < 0.01$, *df* = 63 and 140), between 30 and 39 years of age in research and development organizations (F' = 4.15, $p < 0.05$, *df* = 63 and 140), between 40 and 49 years of age in research and development organizations (F' = 4.70, $p < 0.01$, *df* = 63 and 140), 50 years of age and older in research and development organizations (F' = 8.05, $p < 0.01$, *df* = 63 and 140), and 50 years of age and older in academic/auxiliary services organizations (F' = 5.71, $p < 0.01$, *df* = 63 and 140). The combination of subjects between 30 and 39 years of age in academic/auxiliary services organizations was excluded. In all of the above comparisons the mean value for subjects that were 50 years of age and older working in a financial environment was significantly lower than any of the comparative organization-age group combinations. Thus the former subjects experienced task characteristics as more problematic than the subjects of the latter combinations.

Finally subjects 50 years of age and older and working in research and development organizations were found to differ significantly from five other organization-age group combinations of which respondents that were between 30 and 39 years of age and worked in academic/auxiliary services organizations and that were 50 years of age and older and that worked in financial organizations, have been reported above. The remaining combinations

involved respondents who were between 40 and 49 years of age and worked in financial organizations (F' = 4.26, $p < 0.05$, *df* = 63 and 140), between 20 and 29 years of age and worked in production/services organizations (F' = 8.72, $p < 0.01$, *df* = 63 and 140), and between 40 and 49 years of age and also worked in production/services organizations (F' = 6.81, $p < 0.01$, *df* = 63 and 140). In all of the comparisons the mean score for subjects 50 years of age and older and working in research and development was significantly higher than for the comparative organization-age group combination, which meant that the former experienced task characteristics as less problematic than the latter.

Table 9.24: Mean values for task characteristics by organization grouping and age group

Age Groups	Type of Organization Grouping							
	Financial		Prod/Serv		R&D		Acad/Aux Services	
	Mean	N	Mean	N	Mean	N	Mean	N
20-29	53.50	4	48.06	16	-	-	51.00	3
30-39	50.46	26	50.80	20	50.86	21	45.73	11
40-49	50.14	22	47.57	7	51.53	15	50.27	15
50+	45.00	7	53.14	7	54.20	10	51.95	19

5) Physical working conditions and job equipment

The fifth comparison involved the variable of physical working conditions (IWSPW). The analysis of variance is given in Table 9.25. The F value of 2.05 was significant ($p < 0.01$). Only one significant one-way interaction was found, namely for types of organization groupings. No significant two-way interactions could be found.

Table 9.25: Analysis of variance for physical working conditions

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	3201.90	50.82	2.05*	0.0002
Error	140	3464.75	24.75		
Corrected Total	203	6666.65			

R-Square	Coeff Var	Root MSE	IWSPW Mean
0.48	20.16	4.97	24.68

Source	DF	Type 111 SS	Mean Square	F Value	Pr > F
Organization	3	460.28	153.43	6.20*	0.0006
Qualification	4	138.48	34.62	1.40	0.2375
Position	2	46.36	23.18	0.94	0.3944
Age	3	71.43	23.81	0.96	0.4126
Org*Qual	10	330.05	33.01	1.33	0.2183
Org*Pos	6	176.11	29.35	1.19	0.3172
Org*Age	9	150.73	16.75	0.68	0.7289
Qual*Pos	8	49.75	6.22	0.25	0.9798
Qual*Age	12	470.95	39.25	1.59	0.1022
Pos*Age	6	182.30	30.38	1.23	0.2957

A series of Scheffé tests were carried out where the four types of organization groupings were paired-off two at a time. Five of the six comparisons showed significant differences regarding the respondent's perception of their physical working conditions. For the five comparisons it was found that F_{crit} was equal to 3.96 ($p < 0.05$) and equal to 4.41 ($p < 0.01$). Firstly financial organizations differed significantly from production/services organizations ($F' = 10.12$, $p < 0.01$, *df* = 63 and 140). The mean score for the former was lower than for the latter meaning that subjects working for financial organizations saw their physical working conditions as more problematic than those working for production/services organizations. Secondly financial organizations differed significantly form academic/auxiliary services organizations ($F' = 16.15$, $p < 0.01$, *df* = 63 and 140). In this case the mean score of subjects working in financial organizations was significantly higher than for those working in academic/auxiliary services organizations implying that the former experienced their physical working conditions as less problematic than the latter. Thirdly production/services organizations differed significantly from research and development organizations ($F' = 7.14$, $p < 0.01$, *df* = 63 and 140). The mean score of the first was significantly higher than for the second, which meant that production/services organizations perceived their physical working conditions as less perturbing than their counterparts in research and development organizations. Fourthly production/services organizations differed significantly from academic/auxiliary services organizations ($F' = 47.33$, $p < 0.01$, *df* = 63 and 140). Again the mean score for subjects working in production/services organizations was significantly higher than for those working in academic/auxiliary services organizations implying that the former experienced their physical working conditions as less worrisome than the latter. Finally research and development organizations differed significantly from academic/auxiliary services organizations ($F' = 16.94$, $p < 0.01$, *df* = 63 and 140). Here the first organization's subjects also had a higher mean score than that for the second organization, which was indicative that respondents in research and development organizations perceived their physical working conditions as less perturbing than those found in academic/auxiliary services environments. No differences were found between financial and research and development organizations in terms of physical working conditions.

6) Career matters

The sixth comparison involved the variable of task characteristics (IWSCM). The analysis of variance is given in Table 9.26. The F value of 1.76 was significant ($p < 0.01$). Significant differences were found for types of organization groupings and significant interactions were found for type of organization grouping with qualification levels (Table 9.27).

Table 9.26: Analysis of variance for career matters

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	3491.57	55.42	1.76*	0.0031
Error	140	4403.26	31.45		
Corrected Total	203	7894.82			

R-Square	Coeff Var	Root MSE	CM Mean
0.44	22.92	5.61	24.47

Source	DF	Type 111 SS	Mean Square	F Value	Pr > F
Organization	3	302.18	100.73	3.20*	0.0253
Qualification	4	271.83	67.96	2.16	0.0765
Position	2	91.38	45.69	1.45	0.2374
Age	3	120.66	40.22	1.28	0.2841
Org*Qual	10	611.51	61.15	1.94*	0.0440
Org*Pos	6	159.78	26.63	0.85	0.5360
Org*Age	9	539.23	59.91	1.90	0.0559
Qual*Pos	8	113.72	14.22	0.45	0.8876
Qual*Age	12	397.98	33.17	1.05	0.4033
Pos*Age	6	95.39	15.90	0.51	0.8034

A series of Scheffé tests were carried out where the four types of organization groupings were paired-off two at a time. Four of the six comparisons showed significant differences regarding the respondents' experience of career matters. For the four comparisons it was found that F_{crit} was equal to 3.96 ($p < 0.05$) and equal to 4.41 ($p < 0.01$). Firstly financial organizations differed significantly from research and development organizations (F' = 4.51, $p < 0.01$, *df* = 63 and 140). The mean score for the former was higher than that for the latter implying that subjects working in financial organizations found career matters less of an issue than for those in research and development organizations. Secondly financial organizations also differed significantly from academic/auxiliary services organizations (F' = 10.99, $p < 0.01$, *df* = 63 and 140). The mean score for subjects found in financial organizations was significantly higher than that for subjects found in academic/auxiliary services organizations, which allowed the conclusion that the former experienced that career matters was less worrisome than for the latter. Thirdly production/services organizations differed significantly from research and development organizations (F' = 4.81, $p < 0.01$, *df* = 63 and 140). In this case the mean score also was higher for those subjects working in production/services organizations than for subjects in research and development organizations indicating that the former found career matters less perturbing than the latter. Finally production/services organizations also differed significantly from academic/auxiliary services organizations (F' = 11.12, $p < 0.01$, *df* = 63 and 140). The mean score for the first organization was significantly higher than for the second organization meaning that subjects in a production/services environment perceived career matters as less problematic than subjects in academic/auxiliary services organizations.

A series of two-way Scheffé tests were carried out where the four types of organization groupings were paired-off with the five qualification groupings. Each of the organization-qualification pairs was then compared to every other pair to determine if a significant difference between them did exist or not. For all of the comparisons it was found that F_{crit} at $p < 0.05$ was equal to 3.96 and $p < 0.01$ was equal to 4.41. Most significantly subjects that had a Masters or Doctoral degree and worked in academic/auxiliary services organizations differed significantly from ten other organization-qualification grouping combinations, namely with a Grade 12 or lower in financial organizations ($F' = 15.13$, $p < 0.01$, *df* = 63 and 140), with a Diploma in financial organizations ($F' = 8.98$, $p < 0.01$, *df* = 63 and 140), with a Bachelors degree in financial organizations ($F' = 14.39$, $p < 0.01$, *df* = 63 and 140), with a Diploma in production/services organizations ($F' = 20.23$, $p < 0.01$, *df* = 63 and 140), with a Bachelors degree in production/services organizations ($F' = 4.15$, $p < 0.05$, *df* = 63 and 140), with an Honours or equivalent degree in production/services organizations ($F' = 10.95$, $p < 0.01$, *df* = 63 and 140), with a Masters of Doctoral degree in production/services organizations ($F' = 4.61$, $p < 0.01$, *df* = 63 and 140), with a Bachelors degree in research and development organizations ($F' = 4.50$, $p < 0.01$, *df* = 63 and 140), with Masters or Doctoral degrees in research and development organizations ($F' = 4.16$, $p < 0.05$, *df* = 63 and 140), and with an Honours or equivalent degree in academic/auxiliary services organizations ($F' = 9.46$, $p < 0.01$, *df* = 63 and 140). In all of the above comparisons the mean value for subjects with a Masters or Doctoral degree working in an academic/auxiliary services environment was significantly lower than any of the comparative organization-qualification groupings combinations. Thus the former subjects experienced career matters as more of a concern than the subjects of the latter combinations.

The next significant comparison involved subjects that had a Diploma and worked in academic/auxiliary services organizations differed significantly from eight other organization-qualification groupings combinations, namely with a Grade 12 or lower in financial organizations ($F' = 9.19$, $p < 0.01$, *df* = 63 and 140), with a Diploma in financial organizations ($F' = 7.40$, $p < 0.01$, *df* = 63 and 140), with a Bachelors degree in financial organizations ($F' = 12.72$, $p < 0.01$, *df* = 63 and 140), with a Diploma in production/services organizations ($F' = 14.27$, $p < 0.01$, *df* = 63 and 140), with an Honours or equivalent degree in production/services organizations ($F' = 9.09$, $p < 0.01$, *df* = 63 and 140), with a Masters of Doctoral degree in production/services organizations ($F' = 4.12$, $p < 0.05$, *df* = 63 and 140), with a Bachelors degree in research and development organizations ($F' = 4.20$, $p < 0.05$, *df* = 63 and 140), and with an Honours or equivalent degree in academic/auxiliary services organizations ($F' = 7.07$, $p < 0.01$, *df* = 63 and 140). In all of the above comparisons the mean value for subjects that had a Diploma and worked in an academic/auxiliary services environment was significantly lower than any of the comparative organization-qualification groupings combinations. Thus the former

subjects experienced career matters as more problematic than the subjects of the latter combinations.

The third significant comparison pertained to subjects that had an Honours or equivalent degree and worked for a financial organization differing significantly from five other organization-qualification groupings combinations, namely with a Grade 12 or lower in financial organizations ($F' = 4.75$, $p < 0.01$, $df = 63$ and 140), with a Diploma in financial organizations ($F' = 4.15$, $p < 0.05$, $df = 63$ and 140), with a Bachelors degree in financial organizations ($F' = 9.11$, $p < 0.01$, $df = 63$ and 140), with a Diploma in production/services organizations ($F' = 9.31$, $p < 0.01$, $df = 63$ and 140), and with an Honours or equivalent degree in production/services organizations ($F' = 5.57$, $p < 0.01$, $df = 63$ and 140). In all of the above comparisons the mean value for subjects that had an Honours or equivalent degree and worked for a financial organization was significantly lower than any of the comparative organization-qualification groupings combinations. Thus the former subjects experienced career matters as more worrisome than the subjects of the latter combinations.

The fourth significant comparison pertained to subjects that had a Diploma and worked for a financial organization differing significantly from six other organization-qualification groupings combinations, of which three, namely subjects with an Honours or equivalent degree working in financial organizations, with a Master or Doctoral in academic/auxiliary services organizations, and a Diploma in academic/auxiliary organizations have been mentioned previously. The other combinations included subjects with Grade 10 or lower working for production/services organizations ($F' = 6.91$, $p < 0.01$, $df = 63$ and 140), with Diplomas working for research and development organizations ($F' = 5.48$, $p < 0.01$, $df = 63$ and 140), and with a Masters or Doctoral degree in research and development organizations ($F' = 9.63$, $p < 0.01$, $df = 63$ and 140). In all of the above comparisons the mean value for subjects that had a Diploma and worked for a financial organization was significantly higher than any of the comparative organization-qualification groupings combinations. Thus the former subjects experienced career matters as less problematic than the subjects of the latter combinations.

The fifth significant comparison referred to subjects that had a Masters or Doctoral degree and worked for a research and development organizations differed significantly from five other organization-qualification groupings combinations, of which subjects with a Diploma and working in financial institutions and Masters or Doctoral degrees in academic/auxiliary organizations have been mentioned previously. The remaining two included subjects that had Grade 12 or lower in financial organizations ($F' = 4.33$, $p < 0.05$, $df = 63$ and 140), and with a Bachelors degree in financial organizations ($F' = 8.02$, $p < 0.01$, $df = 63$ and 140). In all of the above comparisons the mean value for subjects that had a Masters or Doctoral degree and

worked for research and development organizations was significantly lower than any of the comparative organization-qualification groupings combinations. Thus the former subjects experienced career matters as more perturbing than the subjects of the latter combinations.

Table 9.27: Mean values for career matters by organization and qualification grouping

Qualification Group	Type of Organization Grouping							
	Financial		Prod/Serv		R&D		Acad/Aux Services	
	Mean	N	Mean	N	Mean	N	Mean	N
Gr 1	25.85	39	23.07	14	-	-	-	-
Gr 2	26.88	8	28.64	14	21.80	5	19.25	8
Gr 3	31.50	4	24.63	8	25.80	5	24.29	7
Gr 4	21.33	9	28.00	7	25.33	3	25.86	14
Gr 5	-	-	25.14	7	23.09	33	19.85	20

7) Social matters

The seventh comparison involved the variable social matters (IWSSM). The analysis of variance is given in Table 9.28. The F value of 1.24 was not significant ($p > 0.05$), which was indicative that not one of the subgroups differed in terms of the dependent variable social matters. No significant one-way or two-way interactions occurred in the comparison.

Table 9.28: Analysis of variance for social matters

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	1457.20	23.13	1.24	0.1483
Error	140	2609.44	18.64		
Corrected Total	203	4066.65			

R-Square	Coeff Var	Root MSE	SM Mean
0.36	17.50	4.32	24.68

Source	DF	Type 111 SS	Mean Square	F Value	Pr > F
Organization	3	88.47	29.49	1.58	0.1964
Qualification	4	115.65	28.91	1.55	0.1908
Position	2	4.90	2.45	0.13	0.8770
Age	3	65.38	21.79	1.17	0.3238
Org*Qual	10	232.77	23.28	1.25	0.2655
Org*Pos	6	179.43	29.90	1.60	0.1502
Org*Age	9	190.19	21.13	1.13	0.3431
Qual*Pos	8	74.77	9.35	0.50	0.8536
Qual*Age	12	267.50	22.29	1.20	0.2917
Pos*Age	6	107.19	17.87	0.96	0.4557

8) Remuneration, fringe benefits and personnel policy

The final comparison involved the variable remuneration, fringe benefits and personnel policy (IWSRF). The analysis of variance is given in Table 9.29. The F value of1.52 was significant ($p < 0.01$). Significant differences were only found for types of organization groupings and significant interactions were found for type of organization grouping with qualification levels (Table 9.30), type of organization grouping with age (Table 9.31), and qualification level with age (Table 9.32).

Table 9.29: Analysis of variance for remuneration, fringe benefits and personnel policy

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	6271.65	99.55	1.52*	0.0217
Error	140	9167.18	65.48		
Corrected Total	203	15438.82			

R-Square	Coeff Var	Root MSE	RF Mean
0.41	28.36	8.09	28.53

Source	DF	Type 111 SS	Mean Square	F Value	Pr > F
Organization	3	1071.50	357.17	5.45*	0.0014
Qualification	4	234.72	58.68	0.90	0.4681
Position	2	366.66	183.33	2.80	0.0642
Age	3	56.48	18.83	0.29	0.8343
Org*Qual	10	1514.88	151.49	2.31*	0.0150
Org*Pos	6	693.69	115.61	1.77	0.1104
Org*Age	9	1351.58	150.18	2.29*	0.0197
Qual*Pos	8	686.81	85.85	1.31	0.2427
Qual*Age	12	1851.96	154.33	2.36*	0.0086
Pos*Age	6	94.32	15.72	0.24	0.9625

Firstly a one-way series of Scheffé tests were carried out where the four types of organization groupings were paired-off two at a time. Four of the six comparisons showed significant differences regarding the respondents' experience of remuneration, fringe benefits and personnel policy. For the four comparisons it was found that F_{crit} was equal to 3.96 ($p < 0.05$) and equal to 4.41 ($p < 0.01$). Firstly financial organizations differed significantly from research and development organizations ($F' = 10.06$, $p < 0.01$, *df* = 63 and 140) and from academic/auxiliary service organizations ($F' = 4.06$, $p < 0.05$, *df* = 63 and 140). In the first case the mean score for financial organizations was lower than that for research and development organizations implying that the former experienced remuneration, fringe benefits and personnel policy as more problematic than the latter. In the second case the mean score for financial organizations was higher than for academic/auxiliary services organizations indicating that in this case subjects in financial organizations perceived remuneration, fringe benefits and personnel policy as less problematic as those in academic/auxiliary services organizations. Secondly production/services organizations only differed significantly from academic/auxiliary

services organizations (F' = 10.34, $p < 0.01$, *df* = 63 and 140). The mean score for production/services organizations was higher when compared to academic/auxiliary services organizations. Subjects working for production/services organizations experienced remuneration, fringe benefits and personnel policy as less worrisome compared to those working in academic/auxiliary services organizations. Thirdly research and development organizations differed significantly from academic/auxiliary services organizations (F' = 24.28, $p < 0.01$, *df* = 63 and 140). Here the mean score of the former was higher than for the latter meaning that subjects found in research and development organizations found remuneration, fringe benefits and personnel policy less of an issue than the subjects found in an academic/auxiliary services environment. No differences were found between financial and production/services organizations and research and development organizations in terms of remuneration, fringe benefits and personnel policy.

Secondly a two-way series of Scheffé tests were carried out where the four types of organization groupings were paired-off with the five qualification groupings. Each of the organization-qualification pairs was then compared to every other pair to determine if a significant difference between them did exist or not. For all of the comparisons it was found that F_{crit} at $p < 0.05$ was equal to 3.96 and $p < 0.01$ was equal to 4.41. Most significantly subjects that had a Masters or Doctoral degree and worked in academic/auxiliary services organizations differed significantly from eight other organization-qualification groupings combinations, namely with a Grade 12 or lower in financial organizations (F' = 4.85.13, $p < 0.01$, *df* = 63 and 140), with a Bachelors degree in financial organizations (F' = 5.67, $p < 0.01$, *df* = 63 and 140), with a Diploma in production/services organizations (F' = 9.35, $p < 0.01$, *df* = 63 and 140), with a Bachelors degree in production/services organizations (F' = 6.96, $p < 0.01$, *df* = 63 and 140), with an Honours or equivalent degree in production/services organizations (F' = 10.44, $p < 0.01$, *df* = 63 and 140), with a Diploma in research and development organizations (F' = 9.78, $p < 0.01$, *df* = 63 and 140), with a Bachelors degree in research and development organizations (F' = 5.46, $p < 0.01$, *df* = 63 and 140), and with an Masters or Doctoral degree in research and development organizations (F' = 16.95, $p < 0.01$, *df* = 63 and 140). In all of the above comparisons the mean value for subjects with a Masters or Doctoral degree working in an academic/auxiliary services environment was significantly lower than any of the comparative organization-qualification groupings combinations. Thus the former subjects experienced remuneration, fringe benefits and personnel policy as a greater concern than the subjects of the latter combinations.

The second most significant comparison involved subjects that had an Honours or equivalent degree and worked in financial organizations. They differed significantly from seven other organization-qualification groupings combinations, namely with a Bachelors degree in financial organizations (F' = 5.38.13, $p < 0.01$, *df* = 63 and 140), with a Diploma in production/services

organizations (F' = 7.31, p < 0.01, *df* = 63 and 140), with a Bachelors degree in production/services organizations (F' = 6.04, p < 0.01, *df* = 63 and 140), with an Honours or equivalent degree in production/services organizations (F' = 8.96, p < 0.01, *df* = 63 and 140), with a Diploma in research and development organizations (F' = 8.79, p < 0.01, *df* = 63 and 140), with a Bachelors degree in research and development organizations (F' = 5.09, p < 0.01, *df* = 63 and 140), and with an Masters or Doctoral degree in research and development organizations (F' = 11.17, p < 0.01, *df* = 63 and 140). In all of the above comparisons the mean value for subjects with an Honours or equivalent degree working in a financial environment was significantly lower than any of the comparative organization-qualification groupings combinations. Thus the former subjects experienced remuneration, fringe benefits and personnel policy as more worrisome than the subjects of the latter combinations.

The third most significant comparison involved subjects that had a Diploma and worked in research and development organizations. They differed significantly from seven other organization-qualification groupings combinations, of which those with an Honours or equivalent degree working in a financial environment and with Masters and Doctoral degrees have been reported earlier. The remaining five included subjects with a Grade 12 or lower in financial organizations (F' = 4.07, p < 0.05, *df* = 63 and 140), with a Grade 12 or lower in production/services organizations (F' = 6.57, p < 0.01, *df* = 63 and 140), with a Diploma in academic/auxiliary services organizations (F' = 4.67, p < 0.01, *df* = 63 and 140), with an Bachelors degree in academic/auxiliary services organizations (F' = 3.99, p < 0.05, *df* = 63 and 140), and with an Honours or equivalent in academic/auxiliary services organizations (F' = 6.49, p < 0.01, *df* = 63 and 140). In all of the above comparisons the mean value for subjects with a Diploma working in research and development environments was significantly higher than any of the comparative organization-qualification groupings combinations. Thus the former subjects experienced remuneration, fringe benefits and personnel policy as less problematic than the subjects of the latter combinations.

The fourth most significant comparison involved subjects that had a Masters or Doctoral degree and worked in research and development organizations. They differed significantly from five other organization-qualification groupings combinations, of which those with an Honours or equivalent degree working in a financial environment and with Masters and Doctoral degrees have been reported earlier. The remaining three included subjects with a Grade 12 or lower in financial organizations (F' = 5.63, p < 0.01, *df* = 63 and 140) and in production/services organizations (F' = 8.67, p < 0.01, *df* = 63 and 140), and with an Honours or equivalent degree in academic/auxiliary services organizations (F' = 8.51, p < 0.01, *df* = 63 and 140). In all of the above comparisons the mean value for subjects with a Masters or Doctoral degree working in a research and development environments was significantly higher than any of the comparative

organization-qualification groupings combinations. Thus the former subjects experienced remuneration, fringe benefits and personnel policy as less perturbing than the subjects of the latter combinations.

The second last significant comparison involved subjects that had an Honours or equivalent degree and worked in academic/auxiliary services organizations. They differed significantly from four other organization-qualification groupings combinations, of which those with a Diploma and with Masters and Doctoral working in a research and development environment have been reported earlier. The remaining two included subjects with an Honours or equivalent degree in production/services organizations ($F' = 6.53$, $p < 0.01$, *df* = 63 and 140), and with a Diploma in production/services organizations ($F' = 4.81$, $p < 0.01$, *df* = 63 and 140). In all of the above comparisons the mean value for subjects with a Diploma working in research and development environments was significantly lower than any of the comparative organization-qualification groupings combinations. Thus the former subjects experienced remuneration, fringe benefits and personnel policy as more problematic than the subjects of the latter combinations.

The last significant comparison involved subjects that had a Diploma and worked in production/services organizations. They differed significantly from four other organization-qualification groupings combinations, of which those with an Honours or equivalent degree working in a production/services environment, a Diploma or a Masters or Doctoral and working in research and development have been reported earlier. The remaining comparison included subjects with a Grade 10 or lower in production/services organizations ($F' = 4.91$, $p < 0.01$, *df* = 63 and 140). In all of the above comparisons the mean value for subjects with a Diploma working in production/services environments was significantly lower than any of the comparative organization-qualification groupings combinations. Thus the former subjects experienced remuneration, fringe benefits and personnel policy as more problematic than the subjects of the latter combinations.

Table 9.30: Mean values for remuneration, fringe benefits and personnel policy by organization and qualification grouping

Qualification Group	Type of Organization Grouping							
	Financial		Prod/Serv		R&D		Acad/Aux Services	
	Mean	N	Mean	N	Mean	N	Mean	N
Gr 1	27.85	39	24.79	14	-	-	-	-
Gr 2	29.00	8	31.57	14	35.60	5	25.63	8
Gr 3	33.50	4	31.88	8	32.40	5	26.14	7
Gr 4	22.22	9	34.43	7	29.00	3	24.86	14
Gr 5	-	-	28.00	7	32.39	33	22.95	20

Next a series of Scheffé tests were carried out where the four types of organization groupings were paired-off with the four age groups. Each of the organization-age group pairs was then compared to every other pair to determine if a significant difference between them did exist or not. For all of the comparisons it was found that F_{crit} at $p < 0.05$ was equal to 3.96 and $p < 0.01$ was equal to 4.41. The first significant comparison involved subjects that were between 40 and 49 years of age and worked in research and development organizations, which differed significantly from five other organization-age group combinations, namely between 40 and 49 years of age and worked in financial organizations ($F' = 7.93$, $p < 0.01$, *df* = 63 and 140), 50 years of age or older in production/services organizations ($F' = 4.31$, $p < 0.05$, *df* = 63 and 140), between 20 and 29 years of age and in academic/auxiliary services organizations ($F' = 6.19$, $p < 0.01$, *df* = 63 and 140), between 30 and 39 years of age and in academic/auxiliary services organizations ($F' = 9.77$, $p < 0.01$, *df* = 63 and 140), between 40 and 49 years of age in academic/auxiliary services organizations ($F' = 10.56$, $p < 0.01$, *df* = 63 and 140), and 50 years of age and older in academic/auxiliary services organizations ($F' = 6.62$, $p < 0.01$, *df* = 63 and 140). In all of the above comparisons the mean value for subjects between 40 and 49 years of age and working in a research and development environment was significantly higher than any of the comparative organization-age group combinations. Thus the former subjects experienced remuneration, fringe benefits and personnel policy as less problematic than the subjects of the latter combinations.

The second significant comparison involved subjects that were between 30 and 39 years of age and worked in academic/auxiliary services organizations, which differed significantly from five other organization-age group combinations, of which subjects between 30 and 39 years of age and working in a research and development environment have been reported previously. The other comparisons included subjects between 40 and 49 years of age and in financial organizations ($F' = 4.85$, $p < 0.01$, *df* = 63 and 140), between 30 and 39 years of age production/services organizations ($F' = 6.58$, $p < 0.01$, *df* = 63 and 140), between 30 and 39 years of age in research and development organizations ($F' = 6.27$, $p < 0.01$, *df* = 63 and 140), and 50 years of age and older in research and development organizations ($F' = 8.06$, $p < 0.01$, *df* = 63 and 140). In all of the above comparisons the mean value for subjects between 30 and 39 years of age and working in an academic/auxiliary services environment was significantly lower than any of the comparative organization-age group combinations. Thus the former subjects experienced remuneration, fringe benefits and personnel policy as a greater concern than the subjects of the latter combinations.

The third significant comparison involved subjects that were between 40 and 49 years of age and worked in academic/auxiliary services organizations differed significantly from five other organization-age group combinations, of which the subjects between 40 and 49 years of age in

research and development organizations has been reported above. The remaining comparisons include subjects between 30 and 39 years of age and in financial organizations (F' = 5.18, $p < 0.01$, *df* = 63 and 140), between 30 and 39 years of age production/services organizations (F' = 7.07, $p < 0.01$, *df* = 63 and 140), between 30 and 39 years of age in research and development organizations (F' = 6.74, $p < 0.01$, *df* = 63 and 140), and 50 years of age and older in research and development organizations (F' = 8.44, $p < 0.01$, *df* = 63 and 140). In all of the above comparisons the mean value for subjects between 40 and 49 years of age and working in an academic/auxiliary services environment was significantly lower than any of the comparative organization-age group combinations. Thus the former subjects experienced remuneration, fringe benefits and personnel policy as more worrisome than the subjects of the latter combinations.

The fourth significant comparison involved subjects that were between 20 and 29 years of age and worked in academic/auxiliary services organizations, which differed significantly from four other organization-age group combinations, of which subjects that were between 40 and 49 years of age as well as 50 years of age and older and worked in research and development organizations have bee reported previously. The other two combinations included those subjects that were between 20 and 29 years of age and in production/services organizations (F' = 4.38, $p < 0.05$, *df* = 63 and 140) and between 30 and 39 years of age research and development organizations (F' = 4.20, $p < 0.05$, *df* = 63 and 140). In all of the above comparisons the mean value for subjects between 20 and 29 years of age and working in an academic/auxiliary services environment was significantly lower than any of the comparative organization-age group combinations. Thus the former subjects experienced remuneration, fringe benefits and personnel policy as more perturbing than the subjects of the latter combinations.

The fifth significant comparison involved subjects that were between 40 and 49 years of age and worked in financial organizations, which differed significantly from four other organization-age group combinations, of which those subjects that were between 40 and 49 years of age and in research and development organizations as well as 50 years of age and older have been reported earlier. The remaining comparisons included subjects who were between 30 and 39 years of age and in production/services organizations (F' = 4.63, $p < 0.05$, *df* = 63 and 140) and between 30 and 39 years of age in research and development organizations (F' = 4.32, $p < 0.05$, *df* = 63 and 140). In all of the above comparisons the mean value for subjects between 40 and 49 years of age and working in a financial environment was significantly lower than any of the comparative organization-age group combinations. Thus the former subjects experienced remuneration, fringe benefits and personnel policy as more problematic than the subjects of the latter combinations.

Table 9.31: Mean values for remuneration, fringe benefits and personnel policy by organization grouping and age group

Age Groups	Type of Organization Grouping							
	Financial		Prod/Serv		R&D		Acad/Aux Services	
	Mean	N	Mean	N	Mean	N	Mean	N
20-29	27.75	4	28.75	16	-	-	20.67	3
30-39	29.77	26	31.15	20	30.90	21	23.36	11
40-49	25.77	22	31.14	7	33.40	15	23.80	15
50+	26.29	7	25.71	7	33.40	10	26.21	19

Finally a series of Scheffé tests were carried out where the five qualification groupings were paired-off with the four age groups. Each of the qualification-age group pairs was then compared to every other pair to determine if a significant difference between them did exist or not. For all of the comparisons it was found that F_{crit} at $p < 0.05$ was equal to 3.96 and $p < 0.01$ was equal to 4.41. The only significant comparison involved subjects that had a Diploma and were between 30 and 39 years of age, which differed significantly from six other qualification - age group combinations, namely with a Grade 12 or lower and between 30 and 39 years of age ($F' = 4.56$, $p < 0.01$, *df* = 63 and 140), with a Grade 12 or lower and between 40 and 49 years of age ($F' = 6.76$, $p < 0.01$, *df* = 63 and 140), with a Diploma and 50 years of age and older ($F' = 5.21$, $p < 0.01$, *df* = 63 and 140), with an Honours degree or equivalent and between 20 and 29 years of age ($F' = 4.59$, $p < 0.01$, *df* = 63 and 140), with an Honours degree or equivalent and between 40 and 49 years of age ($F' = 5.18$, $p < 0.01$, *df* = 63 and 140), and with a Masters or Doctoral degree and 50 years of age and older ($F' = 5.32$, $p < 0.01$, *df* = 63 and 140). In all of the above comparisons the mean value for subjects with a Diploma and between 30 and 39 years of age was significantly higher than any of the comparative organization-age group combinations. Thus the former subjects experienced remuneration, fringe benefits and personnel policy as less problematic than the subjects of the latter combinations.

Table 9.32: Mean values for remuneration, fringe benefits and personnel policy by qualification grouping and age group

Age Groups	Qualification Groupings									
	Grade 10 or lower		Diplomas		Bachelors Degrees		Honours Degrees		Masters or Doctoral Degrees	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
20-29	29.17	6	29.50	4	31.00	5	22.67	3	27.00	6
30-39	27.67	21	33.77	13	30.63	8	28.69	13	28.91	23
40-49	26.11	18	30.00	8	34.50	4	25.78	9	28.15	20
50+	28.00	8	26.00	10	29.17	6	25.39	8	30.36	11

9.4.3.2 Aggression in the Workplace Questionnaire

Each of the subscales of the Aggression in the Workplace Questionnaire was subjected to the General Linear Model with ANOVA option. Wherever applicable Scheffé tests were calculated from the raw scores as described in paragraph 9.4.3. In the case of comparisons that did not show any significant differences the studentized range test was then applied to these one-way analyses.

1) Aggression in the workplace -witnessed

a) Witnessed overall aggression

The first comparison involved the overall aggression that was witnessed by the respondents. The analysis of variance is given in Table 9.33.

Table 9.33: Analysis of variance for witnessed overall aggression

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	28627.70	454.41	1.10	0.3248
Error	139	57640.09	414.68		
Corrected Total	202	86267.79			

R-Square	Coeff Var	Root MSE	WTOT Mean
0.33	27.01	20.36	75.38

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	2230.21	743.40	1.79	0.1514
Qualification	4	1987.24	496.81	1.20	0.3145
Position	2	187.84	93.92	0.23	0.7976
Age	3	1149.12	383.04	0.92	0.4312
Org*Qual	10	9847.80	984.78	2.37*	0.0126
Org*Pos	6	3194.95	532.49	1.28	0.2684
Org*Age	9	3969.49	441.05	1.06	0.3935
Qual*Pos	8	3625.46	453.18	1.09	0.3718
Qual*Age	12	4855.03	404.59	0.98	0.4751
Pos*Age	6	1938.61	323.10	0.78	0.5876

The F value of 1.10 was not significant ($p > 0.05$), which was indicative that not one of the subgroups differed in terms of the dependent variable witnessed overall aggression. However one significant two-way interaction occurred in the comparison, namely type organization with qualification groupings. However it was not deemed necessary to analyze this interaction as the interaction was most likely due to a random difference, since the overall F ratio was insignificant.

b) Witnessed expressions of hostility

The second comparison involved the expressions of hostility witnessed by the respondents. The analysis of variance is given in Table 9.34. The F value of 0.86 once more was not significant ($p > 0.05$), which was indicative that not one of the subgroups differed in terms of the dependent variable witnessed expressions of hostility. There was no significant two-way interaction that occurred in the comparison.

Table 9.34: Analysis of variance for witnessed expressions of hostility

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	7461.32	118.43	0.86	0.7512
Error	136	18783.96	138.12		
Corrected Total	199	26245.28			

R-Square	Coeff Var	Root MSE	WEH Mean
0.28	31.71	11.75	37.06

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	692.69	230.90	1.67	0.1760
Qualification	4	687.56	171.89	1.24	0.2951
Position	2	22.65	11.33	0.08	0.9213
Age	3	354.19	118.06	0.85	0.4663
Org*Qual	10	1532.47	153.25	1.11	0.3594
Org*Pos	6	445.61	74.27	0.54	0.7788
Org*Age	9	1258.83	139.87	1.01	0.4330
Qual*Pos	8	818.47	102.31	0.74	0.6554
Qual*Age	12	1423.89	118.66	0.86	0.5899
Pos*Age	6	728.29	121.38	0.88	0.5123

c) Witnessed obstructionism

The third comparison involved the obstructionism witnessed by the respondents. The analysis of variance is given in Table 9.35. The F value of 1.11 was again not significant ($p > 0.05$), which was indicative that not one of the subgroups differed in terms of the dependent variable witnessed obstructionism. However one significant two-way interaction occurred in the comparison, namely type of organization grouping with qualification groupings. It was not deemed necessary to analyze this interaction as the interaction was most likely due to random difference, since the overall F ratio was insignificant.

Table 9.35: Analysis of variance for witnessed obstructionism

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	4186.55	66.45	1.11	0.2982
Error	136	8111.85	59.65		
Corrected Total	199	12298.40			

R-Square	Coeff Var	Root MSE	WOB Mean
0.34	29.36	7.72	26.31

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	201.21	67.07	1.12	0.3415
Qualification	4	332.90	83.23	1.40	0.2389
Position	2	37.58	18.79	0.32	0.7303
Age	3	92.29	30.76	0.52	0.6721
Org*Qual	10	1604.62	160.46	2.69*	0.0049
Org*Pos	6	370.67	61.78	1.04	0.4049
Org*Age	9	708.82	78.76	1.32	0.2318
Qual*Pos	8	323.16	40.39	0.68	0.7109
Qual*Age	12	880.31	73.36	1.23	0.2688
Pos*Age	6	373.32	62.22	1.04	0.4003

d) Witnessed overt aggression

The fourth comparison involved the overt aggression witnessed by the respondents. The analysis of variance is given in Table 9.36. The F value of 1.58 was significant ($p < 0.05$). Significant differences were found for types of organization groupings and age grouping. A significant two-way interaction was found for type of organization grouping with qualification level (Table 9.37).

Table 9.36: Analysis of variance for witnessed overt aggression

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	900.63	14.30	1.58	0.0136
Error	136	1227.13	9.02		
Corrected Total	199	2127.76			

R-Square	Coeff Var	Root MSE	WOV Mean
0.42	25.49	3.00	11.79

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	81.01	27.00	2.99*	0.0332
Qualification	4	23.87	5.97	0.66	0.6200
Position	2	2.27	1.14	0.13	0.8819
Age	3	96.56	32.19	3.57*	0.0159
Org*Qual	10	204.79	20.48	2.27*	0.0173
Org*Pos	6	80.82	13.47	1.49	0.1851
Org*Age	9	94.34	10.48	1.16	0.3245
Qual*Pos	8	62.42	7.80	0.86	0.5480
Qual*Age	12	124.28	10.36	1.15	0.3273
Pos*Age	6	90.82	15.14	1.68	0.1310

A series of one-way Scheffé tests were carried out where the four types of organization groupings were-paired off two at a time. Three of the six comparisons showed significant differences regarding the subjects' witnessing of overt aggression. For the three comparisons it was found that F_{crit} at $p < 0.05$ was equal to 3.96 and $p< 0.01$ was equal to 4.41. Firstly subjects who were working in financial organizations differed significantly from those working in both production/services ($F' = 11.84$, $p <0.01$, *df* = 63 and 140), and academic/auxiliary services organizations ($F' = 4.09$, $p <0.05$, *df* = 63 and 140). The mean score for subjects working in financial organizations was significantly lower than for subjects working both in production/services or academic/auxiliary services organizations suggesting that the former witnessed lower levels of overt aggression than the latter. Secondly subjects working in production/services organizations differed significantly form subjects working in research and development organizations ($F' = 8.62$, $p <0.01$, *df* = 63 and 140). Here the mean score for the subjects found in production/services environments was significantly higher than that for subjects found in research and development environments implying that the former witnessed higher levels of overt aggression than the latter. No significant differences were found between subjects working in financial organizations and research and development organizations, between academic/auxiliary services organizations and both production/services and research and development organizations.

A second series of Scheffé tests were carried out where the four age groupings were paired-off two at a time. None of the six comparisons showed any significant difference regarding the respondents' witnessing of overt aggression when F_{crit} at $p < 0.05$ was equal to 3.96 and $p< 0.01$ was equal to 4.41. The studentized range test in turn was also applied to this one-way analyses and the results showed that the age group 20-29 years of age differed significantly from the age group 30-39 ($Q = 15.38 > Q = 4.76$ and $\alpha = 0.05$), the age group 40-49 ($Q = 9.28 > Q = 4.76$ and $\alpha = 0.05$), and the age group 50 years and older ($Q = 6.03 > Q = 4.76$ and $\alpha = 0.05$). Furthermore the age group 30-39 differs significantly from the age group 40-49 ($Q = 6.10 > Q = 4.76$ and $\alpha = 0.05$) and the age group 50 years and older ($Q = 9.35 > Q = 4.76$ and $\alpha = 0.05$). In these comparisons the mean score for subjects found in the age group 20-29 in the first case was higher than for subjects found in the age groups 30-39, 40-49 and 50 years and older implying that the youngest age group witnessed higher levels of overt aggression than the other age groups. In the second case the mean score for subjects found in the age group 30-39 also was higher than for the age groups 40-49 and 50 years or older again implying that the former witnessed higher levels of overt aggression than the latter age groups.

Another series of Scheffé tests were carried out where the four types of organization groupings were paired-off with the five qualification groupings. Each of the organization-qualification pairs was then compared to another pair to determine if a significant difference did exist or not. For all

of the comparisons it was found that F_{crit} at $p < 0.05$ was equal to 3.96 and $p < 0.01$ was equal to 4.41. Most significantly respondents that worked in production/services organizations and had a Grade 12 or lower differed significantly from six other organization-qualification groupings, namely form subjects who worked in financial organizations and had a Grade 12 or lower (F' = 15.94, $p < 0.01$, *df* = 63 and 140), who worked in financial organizations and had a Diploma (F' = 3.99, $p < 0.05$, *df* = 63 and 140), who worked in production/services organizations and had an Honours or equivalent degree (F' = 6.36, $p < 0.01$, *df* = 63 and 140), who worked in research and development organizations and had a Bachelor degree (F' = 4.88, $p < 0.01$, *df* = 63 and 140) or Masters or Doctoral degree (F' = 12.96, $p < 0.01$, *df* = 63 and 140), and who were found in academic/auxiliary services organizations and had an Honours or equivalent degree (F' = 10.57, $p < 0.01$, *df* = 63 and 140). In all of the above comparisons the mean score for subjects working in production/services organizations and who had a Grade 12 or lower was significantly higher than for the other six organization-qualification combinations implying that the former witnessed higher levels of overt aggression than the latter groupings.

The second significant comparison involved subjects that worked for academic/auxiliary services organizations and who had a Diploma. They differed significantly from subjects from two other organization-qualification groupings, namely from subjects who worked in financial organizations and who had a Grade 12 or lower (F' = 5.17, $p < 0.01$, *df* = 63 and 140) or in production/services organizations who also had a Diploma (F' = 3.99, $p < 0.05$, *df* = 63 and 140). In both of these comparisons the mean score for subjects working in academic/auxiliary services organizations and who had a Diploma was significantly higher than for the other two organization-qualification combinations meaning that the former witnessed higher levels of overt aggression than the latter two groupings.

Finally the third significant comparison was for subjects who worked in academic/auxiliary services organizations and who had a Masters or Doctoral degree differed significantly from one other organization-qualification grouping, namely with subjects working for financial organizations and who had a Grade 12 or lower (F' = 4.75, $p < 0.01$, *df* = 63 and 140). In this comparison the mean score for subjects who worked in academic/auxiliary services organizations and who had a Masters or Doctoral degree was significantly higher than for those working in financial organizations with a Grade 12 or lower, which meant that the former experienced higher levels of overt aggression than the latter.

Table 9.37: Mean values for witnessed overt aggression by organization and qualification grouping

Qualification Group	Type of Organization Grouping							
	Financial		Prod/Serv		R&D		Acad/Aux Services	
	Mean	N	Mean	N	Mean	N	Mean	N
Gr 1	10.85	39	14.69	13	-	-	-	-
Gr 2	10.50	8	12.71	14	12.60	5	13.50	8
Gr 3	11.50	4	13.00	8	11.20	5	12.29	7
Gr 4	12.33	9	11.14	7	11.00	3	10.93	14
Gr 5	-	-	12.71	7	11.15	33	12.65	20

2) Aggression in the workplace -experienced

a) Experienced overall aggression

The first comparison involved the overall aggression that was witnessed by the subjects. The analysis of variance is given in Table 9.38.

Table 9.38: Analysis of variance for experienced overall aggression

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	22862.49	362.90	1.17	0.2205
Error	137	42405.07	309.53		
Corrected Total	200	65267.55			

R-Square	Coeff Var	Root MSE	ETOT Mean
0.35	27.57	17.59	63.82

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	1754.48	584.83	1.89	0.1343
Qualification	4	902.98	225.75	0.73	0.5734
Position	2	33.91	16.95	0.05	0.9467
Age	3	3129.15	1043.05	3.37*	0.0204
Org*Qual	10	6595.25	659.53	2.13*	0.0259
Org*Pos	6	1155.26	192.54	0.62	0.7124
Org*Age	9	3025.37	336.15	1.09	0.3770
Qual*Pos	8	2163.49	270.44	0.87	0.5404
Qual*Age	12	5685.08	473.76	1.53	0.1202
Pos*Age	6	2023.02	337.17	1.09	0.3719

The F value of 1.17 was also not significant ($p > 0.05$), which was indicative that not one of the subgroups should have differed in terms of the dependent variable experienced overall aggression. However age as a main effect did differ significantly. Further one significant two-way interaction occurred in the comparison, namely type organization with qualification groupings. Further analysis of either interaction was deemed unnecessary as the overall F ratio of 1.17 was insignificant.

b) Experienced expressions of hostility

The second comparison involved the expressions of hostility experienced by the respondents. The analysis of variance is given in Table 9.39. The F value of 0.93 once more was not significant ($p > 0.05$), which was indicative that not one of the subgroups differed in terms of the dependent variable witnessed expressions of hostility. There was no significant two-way interaction that occurred in the comparison.

Table 9.39: Analysis of variance for experienced expressions of hostility

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	5840.30	92.70	0.93	0.6138
Error	136	13501.78	99.28		
Corrected Total	199	19342.08			
	R-Square	**Coeff Var**	**Root MSE**	**EEH Mean**	
	0.30	32.52	9.96	30.64	
Source	**DF**	**Type III SS**	**Mean Square**	**F Value**	**Pr > F**
Organization	3	617.57	205.86	2.07	0.1066
Qualification	4	388.18	97.05	0.98	0.4221
Position	2	38.11	19.06	0.19	0.8256
Age	3	760.79	253.60	2.55	0.0580
Org*Qual	10	1266.83	126.68	1.28	0.2499
Org*Pos	6	308.93	51.49	0.52	0.7934
Org*Age	9	817.84	90.87	0.92	0.5140
Qual*Pos	8	498.38	62.30	0.63	0.7536
Qual*Age	12	1298.93	108.24	1.09	0.3731
Pos*Age	6	750.94	125.16	1.26	0.2797

c) Experienced obstructionism

The third comparison involved the obstructionism experienced by the respondents. The analysis of variance is given in Table 9.40. The F value of 1.26 was not significant ($p > 0.05$), which was indicative that not one of the subgroups differed in terms of the dependent variable experienced obstructionism. However one significant two-way interaction was obtained for types of organization groupings with qualification grouping. It was deemed unnecessary to analyze this interaction any further because of the insignificant F ratio of 1.26.

Table 9.40: Analysis of variance for experienced obstructionism

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	4409.38	69.99	1.26	0.1304
Error	136	7531.40	55.38		
Corrected Total	199	11940.78			

R-Square	Coeff Var	Root MSE	EOB Mean
0.37	32.80	7.44	22.69

Source	DF	Type 111 SS	Mean Square	F Value	Pr > F
Organization	3	166.26	55.42	1.00	0.3946
Qualification	4	106.89	26.72	0.48	0.7485
Position	2	3.19	1.59	0.03	0.9717
Age	3	308.36	102.79	1.86	0.1400
Org*Qual	10	1537.90	153.79	2.78*	0.0037
Org*Pos	6	214.59	35.76	0.65	0.6934
Org*Age	9	566.04	62.89	1.14	0.3420
Qual*Pos	8	602.29	75.29	1.36	0.2198
Qual*Age	12	1235.84	102.99	1.86*	0.0447
Pos*Age	6	193.29	32.22	0.58	0.7444

d) Experienced overt aggression

The fourth comparison involved the overt aggression experienced by the respondents. The analysis of variance is given in Table 9.41. The F value of 2.70 was significant ($p < 0.05$). Significant differences were found for types of organization groupings and age grouping. Three significant two-way interactions were found, namely type of organization grouping with qualification level (Table 9.42), qualification level with age grouping (Table 9.43), and position level with age grouping (Table 9.44).

Table 9.41: Analysis of variance for experienced overt aggression

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	824.71	13.09	2.70	< .0001
Error	136	659.48	4.85		
Corrected Total	199	1484.20			

R-Square	Coeff Var	Root MSE	EOV Mean
0.56	20.78	2.20	10.60

Source	DF	Type 111 SS	Mean Square	F Value	Pr > F
Organization	3	55.75	18.58	3.83*	0.0113
Qualification	4	4.61	1.15	0.24	0.9168
Position	2	1.65	0.83	0.17	0.8436
Age	3	134.50	44.83	9.25*	< .0001
Org*Qual	10	205.89	20.59	4.25*	< .0001
Org*Pos	6	26.29	4.38	0.90	0.4943
Org*Age	9	71.80	7.98	1.65	0.1084
Qual*Pos	8	11.94	1.49	0.31	0.9620
Qual*Age	12	152.24	12.69	2.62*	0.0036
Pos*Age	6	86.00	14.33	2.96*	0.0096

A series of Scheffé tests were carried out where the four organizations were paired-off two at a time. Four of the six comparisons showed a significant difference regarding the respondents' experience of overt aggression. For the four comparisons it was found that F_{crit} at $p < 0.05$ was equal to 3.96 and $p< 0.01$ was equal to 4.41. Subjects working for financial organizations differed significantly from subjects working in both production/services ($F' = 12.92$, $p < 0.01$, *df* = 63 and 140) and academic/auxiliary organizations ($F' = 8.26$, $p < 0.01$, *df* = 63 and 140). The mean score for the subjects working in financial organizations was lower than for subjects working in both production/services and academic/auxiliary services organizations. It meant that former experienced lower levels of overt aggression than the latter. Secondly subjects working in production/services organizations differed significantly from subjects working in research and development organizations ($F' = 10.40$, $p < 0.01$, *df* = 63 and 140). The mean score for the subjects working in production/services environments was higher than for subjects working in research and development organizations, meaning that the former experienced higher levels of overt aggression than the latter. Thirdly subjects working in research and development organizations differed significantly from subjects working in academic/auxiliary organizations ($F' = 6.48$, $p < 0.01$, *df* = 63 and 140), the mean score of the former being significantly lower than for the latter. This result suggested that the subjects working in research and development organizations experienced lower levels of overt aggression than subjects working in academic/auxiliary organizations. No significant differences were found between financial and research and development organizations and between production/services and academic/auxiliary organizations.

A second series of Scheffé tests were carried out where the four age groupings were paired-off two at a time. Three of the six comparisons showed a significant difference regarding the respondents' experience of overt aggression. For the three comparisons it was found that F_{crit} at $p < 0.05$ was equal to 3.96 and $p< 0.01$ was equal to 4.41. Subjects found in the age group 50 years of age and older differed significantly from subjects found in the age group 20 to 29 years of age ($F' = 9.47$, $p < 0.01$, *df* = 63 and 140), 30 to 39 years ($F' = 5.45$, $p < 0.01$, *df* = 63 and 140), and 40 to 49 years of age ($F' = 5.21$, $p < 0.01$, *df* = 63 and 140). The mean score for the subjects found in the age group 50 years of age or older was significantly higher than for subjects in the remaining age groups implying that the former experienced higher levels of overt aggression than any subjects found in the latter groups.

A series of two-way Scheffé tests were carried out where the four types of organization groupings were paired-off with the five qualification groupings. Each of the organization-qualification pairs was then compared to another pair to determine if a significant difference did exist or not. For all of the comparisons it was found that F_{crit} at $p < 0.05$ was equal to 3.96 and $p < 0.01$ was equal to 4.41. Most significantly respondents that worked in production/services

organizations and had a Grade 12 or lower differed significantly form fourteen other organization-qualification groupings, namely from subjects who worked in financial services organizations and had a Grade 12 or lower (F' = 28.27, $p < 0.01$, *df* = 63 and 140), or Diploma (F' = 13.76, $p < 0.01$, *df* = 63 and 140), or a Bachelors degree (F' = 11.61, $p < 0.01$, *df* = 63 and 140), or an Honours or equivalent degree (F' = 5.36, $p < 0.01$, *df* = 63 and 140), who worked in production/services organizations and had a Diploma (F' = 12.84, $p < 0.01$, *df* = 63 and 140), or an Honours or equivalent degree (F' = 15.85, $p < 0.01$, *df* = 63 and 140), or a Masters or Doctoral degree (F' = 9.09, $p < 0.01$, *df* = 63 and 140), who worked in research and development organizations and who had a Diploma (F' = 8.31, $p < 0.01$, *df* = 63 and 140), or a Bachelors degree (F' = 7.34, $p < 0.01$, *df* = 63 and 140), or an Honours or equivalent degree (F' = 6.30, $p < 0.01$, *df* = 63 and 140), or a Masters or Doctoral degree (F' = 23.69, $p < 0.01$, *df* = 63 and 140), who a worked in academic/auxiliary services organizations and had a Bachelors degree (F' = 4.18, $p < 0.05$, *df* = 63 and 140), or an Honours or equivalent degree (F' = 16.73, $p < 0.01$, *df* = 63 and 140), or a Masters or Doctoral degree (F' = 5.21, $p < 0.01$, *df* = 63 and 140). In all of the above comparisons the mean score for subjects working in production/services organizations was significantly higher than for the other organization-qualification combinations implying that the former experienced higher levels of overt aggression than the latter groupings.

The second significant comparison involved subjects that worked for production/services organizations and who had a Bachelors degree. They differed significantly from subjects from nine other organization-qualification groupings, namely from subjects who worked in financial organizations and had a Grade 12 or lower (F' = 13.07, $p < 0.01$, *df* = 63 and 140), or with a Diploma (F' = 7.74, $p < 0.01$, *df* = 63 and 140), or with a Bachelors degree (F' = 7.25, $p < 0.01$, *df* = 63 and 140), production/services organizations with a Diploma (F' = 5.95, $p < 0.01$, *df* = 63 and 140), or with and Honours or equivalent degree (F' = 9.16, $p < 0.01$, *df* = 63 and 140), or with a Masters or Doctoral degree (F' = 5.16, $p < 0.01$, *df* = 63 and 140), who worked in research and development organizations and had a Diploma (F' = 4.56, $p < 0.01$, *df* = 63 and 140), or Masters or Doctoral degree (F' = 10.78, $p < 0.01$, *df* = 63 and 140), and who worked in academic/auxiliary services organizations and who had an Honours or equivalent degree (F' = 8.29, $p < 0.01$, *df* = 63 and 140). In all of the nine comparisons the mean score for subjects working in production/services organizations and who had a Grade 12 or lower was significantly higher than for the other nine organization-qualification combinations meaning that the former experienced higher levels of overt aggression than the latter groupings.

The third comparison that was found involved subjects that worked in academic/auxiliary services organizations and who had a Masters or Doctoral degree. They differed significantly form seven other organization-qualification groupings of which those working in production/services with a Grade 12 or lower has been mentioned previously. The remaining

groupings included namely subjects that worked in financial organizations with a Grade 12 or lower (F' = 10.47, $p < 0.01$, *df* = 63 and 140), or with a Diploma (F' = 4.45, $p < 0.01$, *df* = 63 and 140), or a Bachelors degree (F' = 4.30, $p < 0.05$, *df* = 63 and 140), subjects working for production/services organizations with an Honours or equivalent degree (F' = 5.75, $p < 0.01$, *df* = 63 and 140), worked in an research and development organizations with a Masters or Doctoral degree (F' = 7.60, $p < 0.01$, *df* = 63 and 140), and who worked in academic/auxiliary services environments and who had an Honours or equivalent degree (F' = 4.79, $p < 0.01$, *df* = 63 and 140). The mean value for the former was significantly higher than for the latter, which meant that subjects that worked in academic/auxiliary services organizations and who had a Masters or Doctoral degree experienced higher levels of overt aggression than the subjects that worked in the other seven organization-qualification combinations.

Finally one more significant comparison was found. Subjects that worked in financial organizations and who had a Diploma differed significantly from four other organization-qualification combinations of which those working in production/services organizations with a Grade 12 or lower, or a Bachelors degree, and working in academic/auxiliary services organizations with a Masters or Doctoral degree has been mentioned previously. They also differed significantly from subjects working in academic/auxiliary services organizations with a Diploma (F' = 4.51, $p < 0.01$, *df* = 63 and 140).

Table 9.42: Mean values for experienced overt aggression by organization and qualification grouping

Qualification Group	Type of Organization Grouping							
	Financial		Prod/Serv		R&D		Acad/Aux Services	
	Mean	N	Mean	N	Mean	N	Mean	N
Gr 1	9.79	39	13.54	13	-	-	-	-
Gr 2	9.71	7	10.50	14	10.20	5	11.71	7
Gr 3	9.25	4	12.88	8	10.40	5	11.43	7
Gr 4	11.33	9	9.43	7	10.00	3	10.07	14
Gr 5	-	-	10.29	7	10.03	33	11.75	20

A second series of two-way Scheffé tests were carried out where the five qualification groupings were paired-off with the four age groupings. Each of the qualification-age grouping pairs was then compared to another pair to determine if a significant difference did exist or not. For all of the comparisons it was found that F_{crit} at $p < 0.05$ was equal to 3.96 and $p < 0.01$ was equal to 4.41. The most significant comparison referred to respondents that had a Grade 12 or lower and were 50 years or older who differed significantly from all the other qualification-age groupings, namely from subjects who all had a Grade 12 or lower and ranged from 20 to 29 years of age (F' = 17.94, $p < 0.01$, *df* = 63 and 140), or 30 to 39 years of age (F' = 26.10, $p < 0.01$, *df* = 63 and 140), or 40 to 49 years of age (F' = 24.54, $p < 0.01$, *df* = 63 and 140), who all had a

Diploma and who ranged from 20 to 29 years of age (F' = 16.52, $p < 0.01$, *df* = 63 and 140), or 30 to 39 years of age (F' = 19.42, $p < 0.01$, *df* = 63 and 140), or 40 to 49 years of age (F' = 5.74, $p < 0.01$, *df* = 63 and 140), or 50 years or older (F' = 18.18, $p < 0.01$, *df* = 63 and 140), who all had a Bachelors degree and who ranged from 20 to 29 years of age (F' = 14.20, $p < 0.01$, *df* = 63 and 140), or 30 to 39 years of age (F' = 5.74, $p < 0.01$, *df* = 63 and 140), or 40 to 49 years of age (F' = 13.70, $p < 0.01$, *df* = 63 and 140), or 50 years or older (F' = 7.52, $p < 0.01$, *df* = 63 and 140), who all had an Honours or equivalent degree and who ranged from 20 to 29 years of age (F' = 13.24, $p < 0.01$, *df* = 63 and 140), or 30 to 39 years of age (F' = 18.83, $p < 0.01$, *df* = 63 and 140), 40 to 49 years of age (F' = 19.18, $p < 0.01$, *df* = 63 and 140), or 50 years or older (F' = 13.00, $p < 0.01$, *df* = 63 and 140), and who had a Masters or Doctoral degree and who fell between 20 to 29 years of age (F' = 14.65, $p < 0.01$, *df* = 63 and 140), or 30 to 39 years of age (F' = 19.99, $p < 0.01$, *df* = 63 and 140), 40 to 49 years of age (F' = 19.40, $p < 0.01$, *df* = 63 and 140), or 50 years or older (F' = 13.14, $p < 0.01$, *df* = 63 and 140). In all of the above comparisons the mean score for subjects with a Grade 12 or lower and who were 50 years or older was significantly higher than for any of the other qualification-age group combinations implying that the former experienced higher levels of overt aggression than the latter groupings.

The second significant comparison involved subjects who had a Diploma and ranged from 40 to 49 years of age. They differed significantly from subjects from six other qualification-age groupings of which Grade 12 or lower and who were 50 years or older has been mentioned previously. They also included subjects who also had a Grade 12 or lower and ranged from 20 to 29 years of age (F' = 4.28, $p < 0.05$, *df* = 63 and 140), or from 30 to 39 years of age (F' = 5.68, $p < 0.01$, *df* = 63 and 140), or from 40 to 49 years of age (F' = 5.18, $p < 0.01$, *df* = 63 and 140), or who had Diploma and ranged from 20 to 29 years of age (F' = 4.56, $p < 0.01$, *df* = 63 and 140), and who had an Honours or equivalent degree and ranged from 40 to 49 years of age (F' = 3.96, $p < 0.05$, *df* = 63 and 140). In all of the six comparisons the mean score for subjects who had had a Diploma and ranged from 40 to 49 years of age was significantly higher than for the six qualification-age group combinations meaning that the former experienced higher levels of overt aggression than the latter groupings.

A third significant comparison was found involving subjects that had a Bachelors degree and that were 30 to 39 years of age. They differed significantly form subjects from six other qualification-age groupings, of which Grade 12 or lower and who were 50 years or older has been mentioned previously. These included subjects who had a Grade 12 or lower and ranged from 20 to 29 years of age (F' = 4.27, $p < 0.05$, *df* = 63 and 140), or from 30 to 39 years of age (F' = 5.68, $p < 0.01$, *df* = 63 and 140), or from 40 to 49 years of age (F' = 5.18, $p < 0.01$, *df* = 63 and 140), and from subjects who had a Diploma and who ranged from 20 to 29 years of age (F' = 4.56, $p < 0.01$, *df* = 63 and 140), and who had an Honours or equivalent degree ranging from

40 to 49 years of age (F' = 3.96, $p < 0.05$, *df* = 63 and 140),. The mean value for the former was significantly higher than for the latter, which meant that subjects who had a Bachelors degree and who were between 30 and 39 years of age experienced higher levels of overt aggression than the subjects of the other six combinations.

Table 9.43: Mean values for experienced overt aggression by qualification and age grouping

Age Groups	Qualification Groupings									
	Grade 10 or lower		Diplomas		Bachelors Degrees		Honours Degrees		Masters or Doctoral Degrees	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
20-29	9.67	6	9.25	4	10.00	5	9.33	3	10.17	6
30-39	9.95	21	10.31	13	12.13	8	10.38	13	10.61	23
40-49	10.00	18	12.13	8	9.75	4	10.00	9	10.60	20
50+	14.86	7	10.00	8	11.50	6	10.75	8	11.00	11

A third series of two-way Scheffé tests were carried out where the three position levels were paired-off with the four age groupings. Each of the position level-age groupings pairs was then compared to another pair to determine if a significant difference did exist or not. For all of the comparisons it was found that F_{crit} at $p < 0.05$ was equal to 3.96 and $p < 0.01$ was equal to 4.41. The most significant comparison referred to respondents that were in middle management and who were 50 years or older differed significantly from ten other position level-age groupings, namely from subjects who were in senior management and ranged from 20 to 29 years of age (F' = 9.30, $p < 0.01$, *df* = 63 and 140), or 30 to 39 years of age (F' = 9.81, $p < 0.01$, *df* = 63 and 140), or 40 to 49 years of age (F' = 11.36, $p < 0.01$, *df* = 63 and 140), or 50 years or older (F' = 13.87, $p < 0.01$, *df* = 63 and 140), who were in middle management and ranged from 20 to 29 years of age (F' = 11.81, $p < 0.01$, *df* = 63 and 140), or 30 to 39 years of age (F' = 17.71, $p < 0.01$, *df* = 63 and 140), or 40 to 49 years of age (F' = 12.74, $p < 0.01$, *df* = 63 and 140), and who were among specialist staff and ranging from 20 to 29 years of age (F' = 13.75, $p < 0.01$, *df* = 63 and 140), or 30 to 39 years of age (F' = 5.88, $p < 0.01$, *df* = 63 and 140), or 40 to 49 years of age (F' = 7.41, $p < 0.01$, *df* = 63 and 140). In all of the ten comparisons the mean score for subjects who were in middle management and were 50 years or older was significantly higher than for the ten position level-age group combinations meaning that the former experienced higher levels of overt aggression than the latter groupings.

The second significant comparison involved subjects who were specialist staff and who were 50 years or older. They differed significantly from subjects from nine other position level-age groupings, namely from subjects who were in senior management and ranged from 20 to 29 years of age (F' = 7.22, $p < 0.01$, *df* = 63 and 140), or 30 to 39 years of age (F' = 7.39, $p < 0.01$, *df* = 63 and 140), or 40 to 49 years of age (F' = 8.96, $p < 0.01$, *df* = 63 and 140), or 50 years or older (F' = 11.51, $p < 0.01$, *df* = 63 and 140), who were in middle management and ranged from

20 to 29 years of age (F' = 9.47, p < 0.01, *df* = 63 and 140), or 30 to 39 years of age (F' = 15.84, p < 0.01, *df* = 63 and 140), or 40 to 49 years of age (F' = 10.32, p < 0.01, *df* = 63 and 140), and who were specialist staff and ranging from 20 to 29 years of age (F' = 11.34, p < 0.01, *df* = 63 and 140), or 40 to 49 years of age (F' = 5.39, p < 0.05, *df* = 63 and 140). In all of the nine comparisons the mean score for subjects who were found among specialist staff and who were 50 years or older was significantly higher than for the nine qualification-age group combinations meaning that the former experienced higher levels of overt aggression than the latter groupings.

Table 9.44: Mean values for experienced overt aggression by age group and position level

Position Level	Age Groups							
	20-29		30-39		40-49		50+	
	Mean	N	Mean	N	Mean	N	Mean	N
Senior Mangement	9.50	4	10.86	36	10.65	37	10.17	23
Middle Management	9.50	6	9.80	30	10.18	17	13.71	7
Specialist Staff	9.93	14	11.17	12	10.20	5	13.00	10

9.4.3.3 IPAT Anxiety Scale

Each of the subscales of the IPAT Anxiety Scale was subjected to the General Linear Model with ANOVA option. Scheffé's tests were calculated from the raw scores as indicated in paragraph 9.4.3.

1) Factor -C

The first comparison involved factor –C, ego weakness or lack of ego weakness of the respondents. The analysis of variance is given in Table 9.45. The F value of 1.11 was not significant (p > 0.05), which was indicative that not one of the subgroups differed in terms of the dependent variable ego weakness or lack of ego strength. There were no significant two-way interactions that occurred in the comparison.

Table 9.45: Analysis of variance for ego weakness or lack of ego strength

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	401.47	6.37	1.11	0.3062
Error	138	793.50	5.75		
Corrected Total	201	1194.98			

R-Square	Coeff Var	Root MSE	-C Mean
0.34	64.93	2.40	3.69

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	1.99	0.66	0.12	0.9509
Qualification	4	6.82	1.71	0.30	0.8798
Position	2	0.14	0.07	0.01	0.9875
Age	3	13.67	4.56	0.79	0.4999
Org*Qual	10	37.16	3.72	0.65	0.7720
Org*Pos	6	31.67	5.28	0.92	0.4840
Org*Age	9	53.19	5.91	1.03	0.4210
Qual*Pos	8	57.86	7.23	1.26	0.2706
Qual*Age	12	21.80	1.82	0.32	0.9856
Pos*Age	6	54.02	9.00	1.57	0.1616

2) Factor L

The second comparison involved factor L, suspiciousness or paranoid insecurity of the respondents. The analysis of variance is given in Table 9.46.

Table 9.46: Analysis of variance for suspiciousness

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	268.03	4.25	1.27	0.1224
Error	138	461.12	3.34		
Corrected Total	201	729.15			

R-Square	Coeff Var	Root MSE	L Mean
0.37	54.22	1.83	3.37

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	2.46	0.82	0.25	0.8645
Qualification	4	26.42	6.60	1.98	0.1014
Position	2	0.60	0.30	0.09	0.9142
Age	3	8.63	2.88	0.86	0.4629
Org*Qual	10	48.89	4.89	1.46	0.1596
Org*Pos	6	28.82	4.80	1.44	0.2047
Org*Age	9	15.31	1.70	0.51	0.8660
Qual*Pos	8	28.08	3.51	1.05	0.4017
Qual*Age	12	54.43	4.54	1.36	0.1938
Pos*Age	6	9.80	1.63	0.49	0.8158

The F value of 1.27 was not significant ($p > 0.05$), which was indicative that not one of the subgroups differed in terms of the dependent variable suspiciousness. There were no significant two-way interactions that occurred in the comparison.

3) Factor O

The third comparison involved factor O, guilt proneness of the respondents. The analysis of variance is given in Table 9.47.

Table 9.47: Analysis of variance for guilt proneness

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	1286.39	20.42	1.37	0.0666
Error	138	2061.73	14.94		
Corrected Total	201	3348.12			

R-Square	Coeff Var	Root MSE	O Mean
0.38	46.84	3.87	8.25

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	16.55	5.52	0.37	0.7753
Qualification	4	10.02	2.51	0.17	0.9545
Position	2	2.94	1.47	0.10	0.9065
Age	3	11.82	3.94	0.26	0.8515
Org*Qual	10	290.88	29.09	1.95*	0.0438
Org*Pos	6	105.71	17.62	1.18	0.3209
Org*Age	9	169.52	18.84	1.26	0.2638
Qual*Pos	8	156.62	19.58	1.31	0.2432
Qual*Age	12	64.55	5.38	0.36	0.9749
Pos*Age	6	46.99	7.83	0.52	0.7892

The F value of 1.37 was not significant ($p > 0.05$), which was indicative that not one of the subgroups differed in terms of the dependent variable guilt proneness. There was only one significant two-way interaction that occurred in the comparison, namely type organization with qualification grouping. However analysis of this two-way interaction was deemed unnecessary because of the main effect F ratio's insignificance.

4) Factor -Q_3

The fourth comparison involved factor –Q_3, defective integration and lack of self-sentiment of the respondents. The analysis of variance is given in Table 9.48. The F value of 0.97 was not significant ($p > 0.05$), which was indicative that not one of the subgroups differed in terms of the dependent variable defective integration and lack of self-sentiment. Again there was only one significant two-way interaction that occurred in the comparison, namely type organization with qualification grouping. However analysis of this two-way interaction was deemed unnecessary due to the insignificant overall F ratio of 0.97.

Table 9.48: Analysis of variance for defective integration and lack of self-sentiment

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	511.09	8.11	0.97	0.5640
Error	138	1154.46	8.37		
Corrected Total	201	1665.54			

R-Square	Coeff Var	Root MSE	$-Q_3$ Mean
0.31	59.62	2.89	4.85

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	38.93	12.98	1.55	0.2041
Qualification	4	27.26	6.81	0.81	0.5179
Position	2	17.05	8.52	1.02	0.3637
Age	3	7.18	2.39	0.29	0.8354
Org*Qual	10	181.57	18.16	2.17*	0.0230
Org*Pos	6	74.12	12.35	1.48	0.1905
Org*Age	9	17.09	1.90	0.23	0.9902
Qual*Pos	8	92.06	11.51	1.38	0.2124
Qual*Age	12	53.97	4.50	0.54	0.8870
Pos*Age	6	35.41	5.90	0.71	0.6457

5) Factor Q_4

The fifth comparison involved factor Q_4, frustrative tension or id pressure of the respondents. The analysis of variance is given in Table 9.49. The F value of 1.46 was significant ($p < 0.05$). However not one of the subgroups differed in terms of the dependent variable frustrative tension or id pressure. Also there were no significant two-way interactions that occurred in the comparison.

Table 9.49: Analysis of variance for frustrative tension or id pressure

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	1205.05	19.13	1.46*	0.0341
Error	138	1806.48	13.09		
Corrected Total	201	3011.53			

R-Square	Coeff Var	Root MSE	Q_4 Mean
0.40	55.08	3.62	6.57

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	18.11	6.04	0.46	0.7099
Qualification	4	32.59	8.15	0.62	0.6473
Position	2	17.95	8.97	0.69	0.5055
Age	3	32.45	10.82	0.83	0.4815
Org*Qual	10	169.87	16.99	1.30	0.2376
Org*Pos	6	119.99	20.00	1.53	0.1735
Org*Age	9	54.48	6.05	0.46	0.8976
Qual*Pos	8	80.12	10.02	0.77	0.6340
Qual*Age	12	227.70	18.97	1.45	0.1509
Pos*Age	6	43.06	7.18	0.55	0.7707

6) Score A

The sixth comparison involved Score A, covert anxiety of the respondents. The analysis of variance is given in Table 9.50. The F value of 1.08 was not significant ($p > 0.05$), which was indicative that not one of the subgroups differed in terms of the dependent variable covert anxiety. Furthermore not one significant two-way interaction occurred in the comparison.

Table 9.50: Analysis of variance for covert anxiety

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	2586.80	41.06	1.08	0.3444
Error	138	5229.60	37.90		
Corrected Total	201	7816.40			
	R-Square	**Coeff Var**	**Root MSE**	**SCOREA Mean**	
	0.33	44.25	6.16	13.91	
Source	**DF**	**Type III SS**	**Mean Square**	**F Value**	**Pr > F**
Organization	3	27.14	9.05	0.24	0.8692
Qualification	4	39.27	9.82	0.26	0.9037
Position	2	0.66	0.33	0.01	0.9913
Age	3	33.04	11.01	0.29	0.8321
Org*Qual	10	495.52	49.55	1.31	0.2322
Org*Pos	6	145.47	24.24	0.64	0.6982
Org*Age	9	107.97	12.00	0.32	0.9685
Qual*Pos	8	249.04	31.13	0.82	0.5850
Qual*Age	12	391.88	32.66	0.86	0.5872
Pos*Age	6	41.67	6.94	0.18	0.9811

7) Score B

The seventh comparison involved Score B, overt anxiety of the respondents. The analysis of variance is given in Table 9.51. The F value of 1.12 was not significant ($p > 0.05$), which was indicative that not one of the subgroups differed in terms of the dependent variable overt anxiety. Again not one significant two-way interaction occurred in the comparison.

Table 9.51: Analysis of variance for overt anxiety

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	3250.65	51.60	1.12	0.2883
Error	138	6354.29	46.05		
Corrected Total	201	9604.94			

R-Square	Coeff Var	Root MSE	SCOREB Mean
0.34	52.90	6.79	12.83

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	6.38	2.13	0.05	0.9868
Qualification	4	23.18	5.80	0.13	0.9729
Position	2	5.29	2.65	0.06	0.9441
Age	3	40.96	13.65	0.30	0.8279
Org*Qual	10	702.98	70.30	1.53	0.1360
Org*Pos	6	452.15	75.36	1.64	0.1415
Org*Age	9	272.17	30.24	0.66	0.7466
Qual*Pos	8	257.64	32.21	0.70	0.6916
Qual*Age	12	370.53	30.88	0.67	0.7772
Pos*Age	6	125.85	20.98	0.46	0.8400

8) Total anxiety

Finally the eighth comparison involved the total anxiety experienced by the respondents. The analysis of variance is given in Table 9.52. The F value of 1.16 was not significant ($p > 0.05$), which was indicative that not one of the subgroups differed in terms of the dependent variable overt anxiety. Once more not one significant two-way interaction occurred in the comparison.

Table 9.52: Analysis of variance for the total anxiety score

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	9973.76	158.31	1.16	0.2301
Error	138	18765.34	135.98		
Corrected Total	201	28739.09			

R-Square	Coeff Var	Root MSE	TOT Mean
0.35	43.61	11.66	26.74

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	49.04	16.35	0.12	0.9481
Qualification	4	97.28	24.32	0.18	0.9490
Position	2	6.57	3.29	0.02	0.9761
Age	3	142.18	47.39	0.35	0.7903
Org*Qual	10	2053.22	205.32	1.51	0.1419
Org*Pos	6	945.57	157.60	1.16	0.3319
Org*Age	9	580.79	64.53	0.47	0.8897
Qual*Pos	8	798.71	99.84	0.73	0.6611
Qual*Age	12	1055.65	87.97	0.65	0.7988
Pos*Age	6	244.04	40.67	0.30	0.9364

9.4.3.4 Beck Depression Inventory

The Beck Depression Inventory was subjected to the General Linear Model with ANOVA option. Scheffé's tests were calculated from the raw scores as indicated in paragraph 9.4.3.

The comparison involved the depression experienced by the respondents. The analysis of variance is given in Table 9.53. The F value of 0.86 was not significant ($p > 0.05$), which was indicative that not one of the subgroups differed in terms of the dependent variable of depression. No significant two-way interactions occurred in the comparison.

Table 9.53: Analysis of variance for depression

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	2229.22	35.38	0.86	0.7467
Error	139	5715.94	41.12		
Corrected Total	202	7945.16			

R-Square	Coeff Var	Root MSE	BDITOT Mean
0.28	95.16	6.41	6.74

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	93.37	31.12	0.76	0.5202
Qualification	4	108.03	27.01	0.66	0.6231
Position	2	57.39	28.70	0.70	0.4994
Age	3	53.24	17.75	0.43	0.7307
Org*Qual	10	350.21	35.02	0.85	0.5800
Org*Pos	6	296.46	49.41	1.20	0.3091
Org*Age	9	179.29	19.92	0.48	0.8832
Qual*Pos	8	258.53	32.32	0.79	0.6158
Qual*Age	12	579.92	48.33	1.18	0.3067
Pos*Age	6	264.21	44.03	1.07	0.3830

9.4.3.5 Penn State Worry Questionnaire

The Penn State Worry Questionnaire was subjected to the General Linear Model with ANOVA option. Scheffé tests were calculated from the raw scores as indicated in paragraph 9.4.3.

The comparison involved the worry experienced by the respondents. The analysis of variance is given in Table 9.54. The F value of 1.23 was not significant ($p > 0.05$), which was indicative that not one of the subgroups differed in terms of the dependent variable of worry. No significant two-way interactions occurred in the comparison.

Table 9.54: Analysis of variance for worry

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	9062.00	143.84	1.23	0.1549
Error	137	15959.63	116.49		
Corrected Total	200	25021.62			

R-Square	Coeff Var	Root MSE	WQTOT Mean
0.36	26.12	10.79	41.32

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	180.00	60.00	0.52	0.6726
Qualification	4	181.22	45.31	0.39	0.8163
Position	2	108.52	54.26	0.47	0.6286
Age	3	115.75	38.58	0.33	0.8028
Org*Qual	10	879.33	87.93	0.75	0.6718
Org*Pos	6	1324.18	220.70	1.89	0.0860
Org*Age	9	1558.46	173.16	1.49	0.1588
Qual*Pos	8	1540.38	192.55	1.65	0.1155
Qual*Age	12	872.80	72.73	0.62	0.8187
Pos*Age	6	256.08	42.68	0.37	0.8992

9.4.3.6 Social Problem-Solving Inventory-Revised

Each of the subscales of the Social Problem-Solving Inventory-Revised was subjected to the General Linear Model with ANOVA option. Scheffé tests were calculated from the raw scores as indicated in paragraph 9.4.3.

1) Positive problem orientation

The first comparison involved the positive problem orientation the respondents perceived to have. The analysis of variance is given in Table 9.55. The F value of 1.09 was not significant ($p > 0.05$), which was indicative that not one of the subgroups differed in terms of the dependent variable positive problem orientation. Not one significant two-way interaction occurred in the comparison.

Table 9.55: Analysis of variance for positive problem orientation

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	667.00	10.59	1.09	0.3302
Error	139	1347.19	9.69		
Corrected Total	202	2014.19			

R-Square	Coeff Var	Root MSE	PPO Mean
0.33	16.99	3.11	18.32

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	40.90	13.63	1.41	0.2435
Qualification	4	15.95	3.99	0.41	0.8002
Position	2	41.14	20.57	2.12	0.1236
Age	3	13.56	4.52	0.47	0.7063
Org*Qual	10	79.59	7.96	0.82	0.6088
Org*Pos	6	98.46	16.41	1.69	0.1270
Org*Age	9	80.94	8.99	0.93	0.5031
Qual*Pos	8	90.05	11.26	1.16	0.3269
Qual*Age	12	111.27	9.27	0.96	0.4931
Pos*Age	6	10.63	1.77	0.18	0.9812

2) Negative problem orientation

The second comparison involved negative problem orientation which the respondents were perceived to have. The analysis of variance is given in Table 9.56. The F value of 1.10 was not significant ($p > 0.05$). However a significant one-way interaction in the variable organization was observed. However it was not deemed necessary to analyze this interaction. No significant two-way interactions occurred in the comparison.

Table 9.56: Analysis of variance for negative problem orientation

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	2533.56	40.22	1.10	0.3188
Error	139	5083.04	36.57		
Corrected Total	202	7616.60			

R-Square	Coeff Var	Root MSE	NPO Mean
0.33	32.74	6.05	18.47

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	400.46	133.49	3.65	0.0142
Qualification	4	12.87	3.22	0.09	0.9861
Position	2	29.60	14.80	0.40	0.6679
Age	3	74.29	24.76	0.68	0.5674
Org*Qual	10	145.84	14.58	0.40	0.9453
Org*Pos	6	54.89	9.15	0.25	0.9585
Org*Age	9	287.05	31.89	0.87	0.5518
Qual*Pos	8	181.46	22.68	0.62	0.7597
Qual*Age	12	414.81	34.57	0.95	0.5042
Pos*Age	6	136.86	22.81	0.62	0.7110

3) Rational problem solving

The third comparison involved the rational problem solving abilities the respondents perceived to have. The analysis of variance is given in Table 9.57.

Table 9.57: Analysis of variance for rational problem solving

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	10845.46	172.15	1.30	0.1038
Error	139	18421.70	132.53		
Corrected Total	202	29267.16			

R-Square	Coeff Var	Root MSE	RPS Mean
0.37	16.99	11.51	67.74

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	479.93	159.98	1.21	0.3096
Qualification	4	280.31	70.08	0.53	0.7148
Position	2	730.21	365.10	2.75	0.0671
Age	3	1446.29	482.10	3.64*	0.0145
Org*Qual	10	2163.32	216.33	1.63	0.1034
Org*Pos	6	2709.89	451.65	3.41*	0.0036
Org*Age	9	1306.06	145.12	1.09	0.3704
Qual*Pos	8	889.97	111.25	0.84	0.5695
Qual*Age	12	2254.47	187.87	1.42	0.1647
Pos*Age	6	444.56	74.09	0.56	0.7622

The F value of 1.30 was not significant ($p > 0.05$). Again only one significant one-way interaction for the variable age could be delineated. However it was not deemed necessary to analyze this interaction. One significant two-way interaction occurred in the comparison, namely organization with position level. Here too it was not deemed necessary to analyze this two-way interaction because of the overall insignificant F ratio.

4) Problem definition and formulation

The fourth comparison involved the ability of the respondents to define and formulate a problem. The analysis of variance is given in Table 9.58. The F value of 1.24 was not significant ($p > 0.05$). Two significant one-way interactions were observed, namely the variables position level and age. However it was not deemed necessary to analyze these interactions. One significant two-way interaction occurred in the comparison, namely organization with position level. Here too it was not deemed necessary to analyze this two-way interaction because of the insignificant F ratio of 1.24.

Table 9.58: Analysis of variance for problem definition and formulation

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	772.67	12.26	1.24	0.1453
Error	139	1369.60	9.85		
Corrected Total	202	2142.27			

R-Square	Coeff Var	Root MSE	PDF Mean
0.36	17.59	3.14	17.85

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	52.08	17.36	1.76	0.1573
Qualification	4	16.62	4.15	0.42	0.7928
Position	2	71.13	35.56	3.61*	0.0296
Age	3	105.50	35.17	3.57*	0.0158
Org*Qual	10	134.98	13.50	1.37	0.2003
Org*Pos	6	161.60	26.93	2.73*	0.0153
Org*Age	9	115.15	12.79	1.30	0.2430
Qual*Pos	8	53.79	6.72	0.68	0.7065
Qual*Age	12	167.11	13.93	1.41	0.1666
Pos*Age	6	57.96	9.66	0.98	0.4410

5) Generation of alternatives

The fifth comparison involved the ability of the respondents to generate alternatives. The analysis of variance is given in Table 9.59. The F value of 1.64 was significant ($p < 0.05$). Significant differences were found for age groupings and significant interactions were found for type of organization grouping with position levels (Table 9.60).

Table 9.59: Analysis of variance for the generation of alternatives

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	1009.81	16.03	1.64*	0.0087
Error	139	1360.87	9.79		
Corrected Total	202	2370.68			

R-Square	Coeff Var	Root MSE	GAS Mean
0.43	18.13	3.13	17.26

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	45.72	15.24	1.56	0.2027
Qualification	4	66.29	16.57	1.69	0.1551
Position	2	55.55	27.77	2.84	0.0620
Age	3	110.82	36.94	3.77*	0.0122
Org*Qual	10	115.83	11.58	1.18	0.3073
Org*Pos	6	214.86	35.81	3.66*	0.0021
Org*Age	9	91.65	10.18	1.04	0.4114
Qual*Pos	8	92.56	11.57	1.18	0.3143
Qual*Age	12	184.76	15.40	1.57	0.1063
Pos*Age	6	30.34	5.06	0.52	0.7951

A series of Scheffé tests were carried out where the four age groupings were paired-off two at a time. Two of the six comparisons showed a significant difference regarding the respondents' perceived ability to generate alternatives. For the two comparisons it was found that F_{crit} at $p < 0.05$ was equal to 3.96 and $p< 0.01$ was equal to 4.41. Subjects who were 20 to 29 years of age differed significantly from the subjects who were 40 to 49 years of age ($F' = 9.62$, $p < 0.01$, *df* = 63 and 140). The mean score for the 20 to 29 years of age group was significantly lower than for the 40 to 49 years of age group, which meant the former seemed to generate less alternatives than the latter group. Secondly subjects who were 40 to 49 years of age differed significantly from the subjects who were 50 years of age or older ($F' = 7.26$, $p < 0.01$, *df* = 63 and 140). Here the mean score for the subjects who fell into the age group 40 to 49 years of age was significantly higher than of the 50 years of age or older group implying that the former saw themselves generating more alternatives than the latter group.

Another series of Scheffé tests were carried out where the four types of organization groupings were paired-off with the three position levels. Each of the organization-position level pairs was then compared to another pair to determine if a significant difference did exist or not. For all of the comparisons it was found that F_{crit} at $p < 0.05$ was equal to 3.96 and $p < 0.01$ was equal to 4.41. Most significantly respondents that worked for financial organizations and who worked as specialist staff differed significantly form seven other organization-position level groupings, namely from subjects who also worked in financial organizations and who were in senior management ($F' = 6.39$, $p < 0.01$, *df* = 63 and 140), who worked in production/services organizations and were in senior management ($F' = 7.95$, $p < 0.01$, *df* = 63 and 140) as well as those who were also specialist staff ($F' = 11.52$, $p < 0.01$, *df* = 63 and 140) , those who worked in research and development organizations and who were in senior management ($F' = 12.39$, $p < 0.01$, *df* = 63 and 140), who worked in academic/auxiliary services organizations and were in senior management ($F' = 4.18$, $p < 0.05$, *df* = 63 and 140) as well as in middle management ($F' = 12.82$, $p < 0.01$, *df* = 63 and 140) and who were specialist staff ($F' = 8.52$, $p < 0.01$, *df* = 63 and 140). In all of the above comparisons the mean score for subjects working in financial organizations and who were among specialist staff was significantly higher than for the other organization-position level combinations implying that the former perceived themselves as generating higher levels of alternatives than the latter groupings.

The second significant comparison involved subjects that worked for academic/auxiliary services organizations and who were in middle management. They differed significantly from subjects from four other organization-position level groupings, of which those working in financial organizations and who were found among specialist staff have been reported previously. Furthermore they differed from subjects who worked in financial organizations and were in senior management ($F' = 4.19$, $p < 0.05$, *df* = 63 and 140), those who worked in

production/services organizations and were in middle management (F' = 4.41, p < 0.01, *df* = 63 and 140), and who worked in research and development organizations and who were in middle management (F' = 7.68, p < 0.01, *df* = 63 and 140). In all of the four comparisons the mean score for subjects working in academic/auxiliary services organizations and who were in middle management positions was significantly lower than for the other four organization-position level combinations meaning that the former generated lower levels of alternatives than the latter groupings.

The third significant comparison involved subjects that worked for academic/auxiliary services organizations and who were in senior management. They differed significantly from subjects from three other organization-position level groupings, of which those working in financial organizations and who were specialist staff have been reported previously. They also differed from those who worked in production/services organizations and were in middle management (F' = 4.08, p < 0.05, *df* = 63 and 140) and from those working in academic/auxiliary organizations and who were also in middle management (F' = 7.23, p < 0.01, *df* = 63 and 140). In all of the three comparisons the mean score for subjects working in academic/auxiliary services organizations and who were in senior management was significantly lower than for the other three organization-position level combinations meaning that the former generated lower levels of alternatives than the latter groupings.

Finally a fourth significant comparison was found. Subjects that worked in academic/auxiliary services organizations and who were in middle management differed significantly form three other organization-position level groupings, of which those involving subjects that also worked in a research and development organization and who were in senior management as well as in an academic/auxiliary services environment and who were in middle management have been reported previously. The only other grouping involved subjects working in a production/services organization and who were working as specialist staff (F' = 6.25, p < 0.01, *df* = 63 and 140). The mean value for the subjects who were found in academic/auxiliary services organizations was significantly higher than for the three comparison groupings, which meant that the former generated more alternatives than the latter.

Table 9.60: Mean values for generation of alternatives by organization grouping and position level

Qualification Group	Type of Organization Grouping							
	Financial		Prod/Serv		R&D		Acad/Aux Services	
	Mean	N	Mean	N	Mean	N	Mean	N
Senior Management	17.50	46	16.86	21	15.84	19	17.81	16
Middle Management	17.50	6	18.17	12	18.40	25	15.72	18
Specialist staff	20.71	7	15.94	17	20.00	2	16.53	15

6) Decision making

The sixth comparison entailed the ability of the respondents to make decisions regarding a problem. The analysis of variance is given in Table 9.61. The F value of 1.14 was not significant ($p > 0.05$). One significant one-way interaction was observed which involved the variable age. However it was not deemed necessary to analyze this interaction. One significant two-way interaction also occurred in the comparison, namely organization with position level. Here too it was not deemed necessary to analyze this two-way interaction because of the insignificant F ratio of 1.14.

Table 9.61: Analysis of variance for decision making

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	710.59	11.28	1.14	0.2615
Error	139	1375.71	9.90		
Corrected Total	202	2086.31			

R-Square	Coeff Var	Root MSE	DM Mean
0.34	19.12	3.15	16.45

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	8.06	2.69	0.27	0.8459
Qualification	4	18.57	4.64	0.47	0.7583
Position	2	27.37	13.69	1.38	0.2543
Age	3	94.69	31.56	3.19*	0.0257
Org*Qual	10	152.58	15.26	1.54	0.1308
Org*Pos	6	146.81	24.47	2.47*	0.0265
Org*Age	9	86.37	9.60	0.97	0.4678
Qual*Pos	8	43.86	5.48	0.55	0.8139
Qual*Age	12	127.86	10.65	1.08	0.3844
Pos*Age	6	32.52	5.42	0.55	0.7711

7) Solution implementation and verification

The seventh comparison looked at the ability of the respondents to implement and verify solutions regarding a problem. The analysis of variance is given in Table 9.62. The F value of 1.00 was not significant ($p > 0.05$). Not one significant one-way interaction was observed. One significant two-way interaction did occur in the comparison, namely organization with position level. Here too it was not deemed necessary to analyze this two-way interaction because of the insignificant F ratio of 1.00.

Table 9.62: Analysis of variance for solution implementation and verification

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	855.30	13.58	1.00	0.4930
Error	139	1890.96	13.60		
Corrected Total	202	2746.26			

R-Square	Coeff Var	Root MSE	SIV Mean
0.31	22.79	3.69	16.18

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	41.28	13.76	1.01	0.3897
Qualification	4	14.90	3.73	0.27	0.8944
Position	2	46.84	23.42	1.72	0.1826
Age	3	102.30	34.10	2.51	0.0616
Org*Qual	10	232.50	23.25	1.71	0.0843
Org*Pos	6	182.37	30.40	2.23*	0.0434
Org*Age	9	111.15	12.35	0.91	0.5204
Qual*Pos	8	109.17	13.65	1.00	0.4366
Qual*Age	12	229.88	19.16	1.41	0.1690
Pos*Age	6	44.90	7.48	0.55	0.7692

8) Impulsivity/carelessness style

The eighth comparison involved the respondent's impulsivity and carelessness style when approaching a problem. The analysis of variance is given in Table 9.63. The F value of 1.20 was not significant ($p > 0.05$). Not a single significant one-way interaction or two-way interaction was observed.

Table 9.63: Analysis of variance for impulsivity/carelessness style

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	2006.37	31.85	1.20	0.1887
Error	139	3689.06	26.54		
Corrected Total	202	5695.43			

R-Square	Coeff Var	Root MSE	ICS Mean
0.35	28.17	5.15	18.29

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	195.40	65.13	2.45	0.0658
Qualification	4	48.61	12.15	0.46	0.7665
Position	2	6.22	3.11	0.12	0.8895
Age	3	126.94	42.31	1.59	0.1935
Org*Qual	10	168.66	16.87	0.64	0.7814
Org*Pos	6	300.80	50.13	1.89	0.0868
Org*Age	9	309.50	34.39	1.30	0.2445
Qual*Pos	8	211.93	26.49	1.00	0.4403
Qual*Age	12	246.54	20.55	0.77	0.6761
Pos*Age	6	204.29	34.05	1.28	0.2690

9) Avoidance style

The sixth comparison entailed the ability of the respondents to make decisions regarding a problem. The analysis of variance is given in Table 9.64. The F value of 1.16 was not significant ($p > 0.05$). Again not one significant one-way interaction or two-way interaction could be delineated.

Table 9.64: Analysis of variance for avoidance style

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	1169.40	18.56	1.16	0.2412
Error	139	2233.59	16.07		
Corrected Total	202	3403.00			

R-Square	Coeff Var	Root MSE	GAS Mean
0.34	31.52	4.01	12.72

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	86.81	28.94	1.80	0.1499
Qualification	4	31.31	7.83	0.49	0.7452
Position	2	28.35	14.18	0.88	0.4162
Age	3	45.86	15.29	0.95	0.4178
Org*Qual	10	244.69	24.47	1.52	0.1373
Org*Pos	6	101.90	16.98	1.06	0.3915
Org*Age	9	103.24	11.47	0.71	0.6955
Qual*Pos	8	63.27	7.91	0.49	0.8602
Qual*Age	12	185.10	15.43	0.96	0.4900
Pos*Age	6	29.47	4.91	0.31	0.9951

10) Total social problem solving

The tenth comparison encompassed the total problem solving ability of the respondents regarding a problem. The analysis of variance is given in Table 9.65. The F value of 1.24 was not significant ($p > 0.05$). Not one significant one-way interaction was observed. One significant two-way interaction occurred in the comparison, namely organization with position level. Again it was not deemed necessary to analyze this two-way interaction because of the insignificant F ratio of 1.24.

Table 9.65: Analysis of variance for total problem solving

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	413.01	6.56	1.24	0.1535
Error	140	743.02	5.31		
Corrected Total	203	1156.03			

R-Square	Coeff Var	Root MSE	SPS Mean
0.36	13.97	2.30	16.49

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Organization	3	33.98	11.33	2.13	0.0987
Qualification	4	11.61	2.90	0.55	0.7016
Position	2	10.09	5.05	0.95	0.3889
Age	3	28.86	9.62	1.81	0.1476
Org*Qual	10	52.12	5.21	0.98	0.4619
Org*Pos	6	81.27	13.55	2.55	0.0224
Org*Age	9	28.26	3.14	0.59	0.8023
Qual*Pos	8	20.50	2.56	0.48	0.8668
Qual*Age	12	47.08	3.92	0.74	0.7111
Pos*Age	6	23.00	3.83	0.72	0.6323

9.5 Co-relationships

The various series of analyses focused on the Pearson correlation coefficients between on the one hand Experience of Work and Life Circumstances Questionnaire and its subscales with on the other hand Aggression in the Workplace Questionnaire and its subscales, both witnessed and experienced, the IPAT Anxiety Scale, the Beck Depression Inventory, the Penn State Worry Questionnaire, and the Social Problem-Solving Inventory-Revised and its subscales. The analyses were done for the total group, the two genders, the four age groups, the two marital categories, the four business sectors, the five qualification divisions, and the three position levels. Only the correlations that occurred on the 5% or 1% level of probability were considered significant. Furthermore when interpreting the results for the variables organizational functioning, task characteristics, physical working conditions, career matters, social matters, and remuneration, fringe benefits and personnel policy it must be borne in mind that the raw scores are reversed according to the scoring manual for this test (Van Zyl & Van der Walt, 1991: 14). In these instances negative correlation coefficients thus reflect positive statistical relationships.

9.5.1 Total group

9.5.1.1 Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire

Correlation analyses involving the Pearson correlation coefficients for each of the variables of the Experience of Work and Life Circumstances Questionnaire with all of the variables of the

Aggression in the Workplace Questionnaire-experienced and -witnessed were undertaken for the total group (Appendix B).

The three hypotheses that were investigated for each of the variables of the Experience of Work and Life Circumstances Questionnaire with the main variable of the Aggression in the Workplace Questionnaire (witnessed as well as experienced) for the total group are as follows:

H_0: $\rho_{LOS,OWS} = 0.00$ or H_0: $\rho_{IWSOF\text{-}IWSRF} = 0.00$
H_1: $\rho_{LOS,OWS} \approx 1.00$ H_1: $\rho_{IWSOF\text{-}IWSRF} \approx -1.00$
H_2: $\rho_{LOS,OWS} \approx -1.00$ H_2: $\rho_{IWSOF\text{-}IWSRF} \approx 1.00$

The reader is referred to Appendix B. This addendum contains details of all the relevant correlation coefficients. The results of only the main scales will be presented here.

1) Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire-witnessed

From the results it can be seen that the main scale scores of the subjects, namely level of stress (LOS) correlated positively and significantly with the witnessed total aggression (WTOT, r = 0.386) scale of the Aggression in the Workplace Questionnaire (AWQ).

The three subscales, namely witnessed expressions of hostility (WEH), witnessed obstructionism (WOB), and witnessed overt aggression (WOV), supported the main scale witnessed total aggression (WTOT).

The correlation obtained for level of stress with witnessed total aggression was the most consistent co-relationship. Thus the indicator level of stress correlated significantly with witnessed total aggression in the workplace. High levels of perceived stress on this indicator co-related to high levels of witnessed aggression in the workplace and vice versa. This main indicator thus confirmed the alternative hypothesis H_1.

2) Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire-experienced

Level of stress (LOS) scores correlated positively and significantly with the experienced total aggression (ETOT, r = 0.306) scale of the Aggression in the Workplace Questionnaire (AWQ).

The three subscales, namely witnessed expressions of hostility (WEH), witnessed obstructionism (WOB), and witnessed overt aggression (WOV), supported the main scale witnessed total aggression (WTOT).

The correlation obtained for LOS with experienced aggression was the most consistent co-relationship. This indicator, namely level of stress correlated significantly with witnessed total aggression in the workplace. Again high levels of perceived stress on this indicator co-related to high levels of witnessed total aggression in the workplace and vice versa. Again this indicator confirmed the alternative hypothesis H_1.

9.5.1.2 Experience of Work and Life Circumstances Questionnaire with the IPAT Anxiety Scale

In this section correlation analyses focused on Pearson correlation coefficients describing the co-relationship between each of the variables of the Experience of Work and Life Circumstances Questionnaire and all the variables of the IPAT Anxiety Scale (IAS), for the group as a whole (Appendix B). The three hypotheses that were investigated for each of the variables of the Experience of Work and Life Circumstances Questionnaire with the main variable of the IPAT Anxiety Scale, namely the total anxiety score (TAS) for the total group are as follows:

H_0: $\rho_{LOS,OWS.TAS} = 0.00$ or H_0: $\rho_{IWSOF\text{-}IWSRF.TAS} = 0.00$
H_1: $\rho_{LOS,OWS.TAS} \approx 1.00$ H_1: $\rho_{IWSOF\text{-}IWSRF.TAS} \approx -1.00$
H_2: $\rho_{LOS,OWS.TAS} \approx -1.00$ H_2: $\rho_{IWSOF\text{-}IWSRF.TAS} \approx 1.00$

The reader will find detailed information in Appendix B. Thus the results of only the main scales will be presented.

The level of stress (LOS) scores of the subjects correlated positively and significantly with the total anxiety score (TAS, r = 0.586) scale of the IPAT Anxiety Scale (IAS).

The five subscales, namely factor -Q_3, factor Q_4, factor -C, factor L, factor O and the two derived subscales Score A and Score B supported the main scale, namely the total anxiety scale (TAS) for LOS.

Again the correlation found between level of stress and the total anxiety scale was the most consistent. Thus the indicator level of stress correlated significantly with the total anxiety score. High levels of perceived stress on this indicator correlated with high levels of total anxiety. Again this indicator confirmed the alternative hypothesis H_1.

9.5.1.3 Experience of Work and Life Circumstances Questionnaire with the Beck Depression Inventory

Correlation analyses by means of the Pearson correlation coefficients focused on the relationship between each of the variables of the Experience of Work and Life Circumstances

Questionnaire with those of the Beck Depression Inventory (BDI), once again done for the total group (Appendix B). The three hypotheses that were investigated for each of the variables of the Experience of Work and Life Circumstances Questionnaire with the Beck Depression Inventory for the total group are as follows:

H_0: $\rho_{LOS,OWS.BDI} = 0.00$ or H_0: $\rho_{IWSOF\text{-}IWSRF.BDI} = 0.00$
H_1: $\rho_{LOS,OWS.BDI} \approx 1.00$ H_1: $\rho_{IWSOF\text{-}IWSRF.BDI} \approx -1.00$
H_2: $\rho_{LOS,OWS.BDI} \approx -1.00$ H_2: $\rho_{IWSOF\text{-}IWSRF.BDI} \approx 1.00$

Appendix B contains a detailed series of correlation coefficients. The discussion of results focuses on the main scales only.

A significant and positive correlation was found between the subjects' level of stress (LOS, r = 0.656) scores and depression.

The correlation obtained for LOS and depression was the most consistent co-relationship. Thus the indicator level of stress correlated significantly with depression. High levels of perceived stress on this indicator co-related with high levels of depression and vice versa. Once again this indicator confirmed the alternative hypothesis H_1.

9.5.1.4 Experience of Work and Life Circumstances Questionnaire with the Penn State Worry Questionnaire

The next correlation analyses were based on the Pearson correlation coefficients obtained for each of the variables of the Experience of Work and Life Circumstances Questionnaire with those of the Penn State Worry Questionnaire (PSWQ), once more for the total group (Appendix B). The three hypotheses that were investigated for each of the variables of the Experience of Work and Life Circumstances Questionnaire with all of the variables of the Penn State Worry Questionnaire for the total group are as follows:

H_0: $\rho_{LOS,OWS.PSWQ} = 0.00$ or H_0: $\rho_{IWSOF\text{-}IWSRF.PSWQ} = 0.00$
H_1: $\rho_{LOS,OWS.PSWQ} \approx 1.00$ H_1: $\rho_{IWSOF\text{-}IWSRF.PSWQ} \approx -1.00$
H_2: $\rho_{LOS,OWS.PSWQ} \approx -1.00$ H_2: $\rho_{IWSOF\text{-}IWSRF.PSWQ} \approx 1.00$

The detailed co-relations are provided in Appendix B. Here only the results of the main scales will be presented.

A positive and significant correlation was found for the subjects' level of stress (LOS, r = 0.499).

Again the main scale, namely level of stress was the most consistent co-relationship. High levels of perceived stress on this indicator co-related to high levels of worry and vice versa. This indicator thus confirmed the alternative hypothesis H_1.

9.5.1.5 Experience of Work and Life Circumstances Questionnaire with the Social Problem-Solving Inventory-Revised

Correlation analyses of the Pearson correlation coefficients between each of the variables of the Experience of Work and Life Circumstances Questionnaire and those of the variables of the Social Problem-Solving Inventory-Revised (SPSIR) were next done for the total group (Appendix B). The three hypotheses that were investigated for each of the variables of the Experience of Work and Life Circumstances Questionnaire with the main variable of the Social Problem-Solving Inventory-Revised, namely social problem solving (SPS) for the total group are as follows:

H_0: $\rho_{LOS,OWS.SPS} = 0.00$ or H_0: $\rho_{IWSOF\text{-}IWSRF.SPS} = 0.00$
H_1: $\rho_{LOS,OWS.SPS} \approx 1.00$ H_1: $\rho_{IWSOF\text{-}IWSRF.SPS} \approx -1.00$
H_2: $\rho_{LOS,OWS.SPS} \approx -1.00$ H_2: $\rho_{IWSOF\text{-}IWSRF.SPS} \approx 1.00$

If necessary, refer to Appendix B for detailed information. The results of only the main scales will be described.

A negative but significant correlation was obtained for the subjects' level of stress (LOS, r = -0.333) with the main scale of the SPSIR, namely social problem solving (SPS).

In the case of LOS only four scales supported the main scale SPS, namely positive problem orientation (PPO), negative problem orientation (NPO), impulsivity/carelessness style (ICS), and avoidance style (AS).

A consistent co-relationship was obtained for levels of stress with social problem solving in general. The results also showed that the indictor level of stress correlated significantly with social problem solving. High levels of perceived stress co-related to lower levels of social problem solving and vice versa thus confirming the alternative hypothesis H_2.

9.5.2 Gender

9.5.2.1 Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire

The next correlation analyses involved Pearson correlation coefficients between each of the variables of the Experience of Work and Life Circumstances Questionnaire and all of the

variables of the Aggression in the Workplace Questionnaire, both experienced and witnessed aggression, per gender subgroup (Appendix B). The three hypotheses that were investigated for each of the variables of the Experience of Work and Life Circumstances Questionnaire with all of the variables of the Aggression in the Workplace Questionnaire-experienced and -witnessed for gender are as follows:

H_0: $\rho_{LOS,OWS.AWQ} = 0.00$ or H_0: $\rho_{IWSOF\text{-}IWSRF.AWQ} = 0.00$
H_1: $\rho_{LOS,OWS.AWQ} \approx 1.00$ H_1: $\rho_{IWSOF\text{-}IWSRF.AWQ} \approx -1.00$
H_2: $\rho_{LOS,OWS.AWQ} \approx -1.00$ H_2: $\rho_{IWSOF\text{-}IWSRF.AWQ} \approx 1.00$

The reader might refer to Appendix B that contains detailed co-relational information. Only the main scales will be analysed.

1) Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire-witnessed

The level of stress (LOS) scores for both the males and females correlated significantly and positively with the witnessed total aggression scale (WTOT) of the Aggression in the Workplace Questionnaire (AWQ). The respective correlations for the former was 0.295 and for the latter 0.504.

The three subscales, namely witnessed expressions of hostility (WEH), witnessed obstructionism (WOB), and witnessed overt aggression (WOV) for both males and females supported the main scale witnessed total aggression for LOS.

In the case of the males and the females the indicator level of stress was the most consistent co-relationship with witnessed aggression in the workplace. High levels of perceived stress on this indicator co-related to high levels of total witnessed aggression in the workplace. The alternative hypothesis H_1 was confirmed in general for this indicators.

2) Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire-experienced

The scores for level of stress (LOS) correlated significantly and positively with experienced total aggression (ETOT) only for the females ($r = 0.516$).

For the females the main scale, namely LOS was supported by all three of the subscales, namely experienced expressions of hostility (EEH), experienced obstructionism (EOB), and experienced overt aggression (EOB).

For males no significant correlation was found between the indicator level of stress and experienced total aggression in the workplace. Level of stress generally confirmed the null hypothesis. When considering the females a consistent correlation was obtained between the indicator level of stress and experienced total aggression in the workplace. High levels of perceived stress on this indicator co-related with high levels of experienced total aggression in the workplace and vice versa. Thus the alternative hypothesis H_1 was confirmed in general for this indicator.

9.5.2.2 *Experience of Work and Life Circumstances Questionnaire with the IPAT Anxiety Scale*

The ensuing correlation analyses focused on Pearson correlation coefficients derived from each of the variables of the Experience of Work and Life Circumstances Questionnaire being associated with each of the variables of the IPAT Anxiety Scale (IAS), separately done for each gender group (Appendix B). The three hypotheses that were formulated for each of the variables of the Experience of Work and Life Circumstances Questionnaire compared with all of the variables of the IPAT Anxiety Scale (IAS), for gender are as follows:

H_0: $\rho_{LOS,OWS.IPAT} = 0.00$ or H_0: $\rho_{IWSOF\text{-}IWSRF.IPAT} = 0.00$
H_1: $\rho_{LOS,OWS.IPAT} \approx 1.00$ H_1: $\rho_{IWSOF\text{-}IWSRF.IPAT} \approx -1.00$
H_2: $\rho_{LOS,OWS.IPAT} \approx -1.00$ H_2: $\rho_{IWSOF\text{-}IWSRF.IPAT} \approx 1.00$

Appendix B contains detailed information related to the series of analyses. The results of the main scales will be presented.

The level of stress (LOS) scores for males and females correlated significantly and positively with the total anxiety score (TAS) scale of the IAS. The correlation for the former was 0.621 and for the latter was 0.562.

The main scale, TAS in the case of LOS for both males and females were supported by all seven of the subscales of the IAS.

In the case of males and females the correlations between the indicator levels of stress was the most consistent. Thus high levels of perceived stress on this indicator co-related to higher levels of total anxiety. Again this indicator confirmed the alternative hypothesis H_1.

9.5.2.3 Experience of Work and Life Circumstances Questionnaire with the Beck Depression Inventory

Analyses of Pearson correlation coefficients calculated between each of the variables of the Experience of Work and Life Circumstances Questionnaire and those of the Beck Depression

Inventory (BDI) were done per gender group (Appendix B). The three hypotheses that were studied for all variables of the Experience of Work and Life Circumstances Questionnaire with the Beck Depression Inventory, by gender, are as follows:

H_0: $\rho_{LOS,OWS.BDI} = 0.00$ or H_0: $\rho_{IWSOF\text{-}IWSRF.BDI} = 0.00$
H_1: $\rho_{LOS,OWS.BDI} \approx 1.00$ H_1: $\rho_{IWSOF\text{-}IWSRF.BDI} \approx -1.00$
H_2: $\rho_{LOS,OWS.BDI} \approx -1.00$ H_2: $\rho_{IWSOF\text{-}IWSRF.BDI} \approx 1.00$

Only the results of only the main scales will be presented here. A detailed set of relevant calculations are provided in Appendix B.

A significant and positive correlation was found for males and females level of stress (LOS) scores with depression. The correlations for the former was 0.652 and for the latter 0.674.

In the case of both males and females the correlation between level of stress and depression was the most consistent. Thus the indicator level of stress in both cases correlated significantly with depression. High levels of perceived stress on this indicator co-related with high levels of depression and vice versa. Throughout this indicator confirmed the alternative hypothesis H_1.

9.5.2.4 Experience of Work and Life Circumstances Questionnaire with the Penn State Worry Questionnaire

Correlation analyses based on an assessment of Pearson correlation coefficients for each of the variables of the Experience of Work and Life Circumstances Questionnaire and the Penn State Worry Questionnaire (PSWQ) were done for each gender grouping (refer to Appendix B). The three hypotheses that were investigated for all variables of the Experience of Work and Life Circumstances Questionnaire with the Penn State Worry Questionnaire, per gender grouping, are as follows:

H_0: $\rho_{LOS,OWS.PSWQ} = 0.00$ or H_0: $\rho_{IWSOF\text{-}IWSRF.PSWQ} = 0.00$
H_1: $\rho_{LOS,OWS.PSWQ} \approx 1.00$ H_1: $\rho_{IWSOF\text{-}IWSRF.PSWQ} \approx -1.00$
H_2: $\rho_{LOS,OWS.PSWQ} \approx -1.00$ H_2: $\rho_{IWSOF\text{-}IWSRF.PSWQ} \approx 1.00$

Detailed relevant statistics are contained in Appendix B. Results of the main scales only will be presented.

For both males and females, significant and positive correlations with the main scale, level of stress (LOS) were noticed. The correlation for the former was 0.596 and for the latter 0.430.

For both males and females a consistent co-relationship was found for level of stress and worry. The indicator level of stress correlated significantly with the variable worry. High levels of

perceived stress on this indicator co-related with high levels of worry and vice versa. Throughout this indicator confirmed the alternative hypothesis H_1.

9.5.2.5 Experience of Work and Life Circumstances Questionnaire with the Social Problem-Solving Inventory-Revised

The next set of correlation analyses considered those Pearson correlation coefficients that were derived from a comparison between each of the variables of the Experience of Work and Life Circumstances Questionnaire and each of the variables of the Social Problem-Solving Inventory-Revised (SPSIR), again being differentiated by gender (Appendix B). The three hypotheses that were investigated for all variables of the Experience of Work and Life Circumstances Questionnaire related to all the variables of the Social Problem-Solving Inventory-Revised (SPSIR) for gender are as follows:

H_0: $\rho_{LOS,OWS.SPSIR} = 0.00$ or H_0: $\rho_{IWSOF\text{-}IWSRF.SPSIR} = 0.00$
H_1: $\rho_{LOS,OWS.SPSIR} \approx 1.00$ H_1: $\rho_{IWSOF\text{-}IWSRF.SPSIR} \approx -1.00$
H_2: $\rho_{LOS,OWS.SPSIR} \approx -1.00$ H_2: $\rho_{IWSOF\text{-}IWSRF.SPSIR} \approx 1.00$

The results of only the main scales will be presented while detailed relevant information is available in Appendix B.

The level of stress (LOS) scores for both males and females correlated significantly but negatively with social problem solving (SPS), with their respective correlations being -0.415 and -0.248.

In the case of the males the main scale, namely social problem solving (SPS) for LOS was only supported by four of the scales of the SPSIR, namely positive problem orientation (PPO), negative problem orientation (NPO), impulsivity/carelessness style (ICS), and avoidance style (AS).

In the case of both males and females a consistent co-relationship was found between the indicator level of stress and social problem solving. This indicator correlated significantly with social problem solving for both genders. Thus high levels of perceived stress on this indicator co-related to low levels of social problem solving. Again this indicator confirmed the alternative hypothesis H_2.

9.5.3 Marital status

9.5.3.1 *Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire*

Statistical analyses of those Pearson correlation coefficients that were derived from the association of each of the variables of the Experience of Work and Life Circumstances Questionnaire with all of the variables of the Aggression in the Workplace Questionnaire, either experienced or witnessed, were done for each marital status group (Appendix B). The three hypotheses that were investigated for each of the variables of the Experience of Work and Life Circumstances Questionnaire with all of the variables of the Aggression in the Workplace Questionnaire (experienced and witnessed) for marital status are as follows:

H_0: $\rho_{WLQ.AWQ} = 0.00$
H_1: $\rho_{WLQ.AWQ} \approx 1.00$
H_2: $\rho_{WLQ.AWQ} \approx -1.00$

Appendix B once again contains further detailed information. The following discussion is limited to the main scales only.

1) Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire-witnessed

The level of stress (LOS) scores for both the married and the non-married group correlated significantly and positively with the witnessed total aggression (WTOT) scale of the Aggression in the Workplace Questionnaire (AWQ). The corresponding correlation for the married group was 0.313 and the non-married group called other was 0.633.

For both the married and the non-married groups all three subscales, namely witnessed expressions of hostility (WEH), witnessed obstructionism (WOB), and witnessed overt aggression (WOV) confirmed the observed trends arising from the association of the main scale witnessed total aggression with the LOS scale.

In the case of the married and non-married subjects the indicator level of stress and witnessed total aggression was the most consistent co-relationship. For both groups this indicator correlated significantly with witnessed total aggression. High levels of perceived stress on this indicator co-related with high levels of witnessed aggression in the workplace and vice versa. The alternative hypothesis H_1 was confirmed for this indicator.

2) Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire-experienced

Level of stress (LOS) correlated significantly and positively for both the married and non-married subjects with the main scale, namely experienced total aggression (ETOT) of the AWQ. The corresponding correlations were found to be 0.201 and 0.699 respectively.

The three subscales, namely experienced expressions of hostility (EEH), experienced witnessed obstructionism (EOB), and experienced overt aggression (EOV) for both the married group and the non-married group supported the main scale experienced total aggression (ETOT) in the case of LOS.

In the case of both married and non-married subjects the indicator level of stress with experienced total aggression produced the most consistent co-relation. The indicator level of stress correlated significantly with experienced total aggression. High levels of perceived stress on these indicators co-related to high levels of experienced aggression in the workplace and vice versa. The alternative hypothesis H_1 was confirmed in general for these indicators.

9.5.3.2 Experience of Work and Life Circumstances Questionnaire with the IPAT Anxiety Scale

Analyses of relevant Pearson correlation coefficients that were made available by each of the comparisons between the variables of the Experience of Work and Life Circumstances Questionnaire and each of the variables of the IPAT Anxiety Scale (IAS) were done for the marital status groups (Appendix B). The three hypotheses that were invoked for each of the variables of the Experience of Work and Life Circumstances Questionnaire with all of the variables of the IPAT Anxiety Scale for marital status are as follows:

H_0: $\rho_{WLQ.IPAT} = 0.00$
H_1: $\rho_{WLQ.IPAT} \approx 1.00$
H_2: $\rho_{WLQ.IPAT} \approx -1.00$

As usual, a detailed set of additional information is contained in Appendix B. The results of only the main scales will be explained in somewhat more detail.

Significant and positive correlations once again were obtained for both the married and non-married groups when level of stress (LOS) was associated with the main scale, namely the total anxiety score (TAS) of the IAS. The corresponding correlations were found to be 0.565 and 0.635 respectively.

The statistical association between the main scale and LOS was confirmed by all seven subscales, namely factor -Q_3, factor Q_4, factor -C, factor L, factor O, Score A, and Sore B, for both the married and non-marred subjects.

For both married and non-married subjects the indicators level of stress and total anxiety produced the most consistent co-relationship. The indicator level of stress correlated significantly with total anxiety. High levels of perceived stress on this indicator co-related with high levels of total anxiety and vice versa. The alternative hypothesis H_1 in general was confirmed by this indicator.

9.5.3.3 Experience of Work and Life Circumstances Questionnaire with the Beck Depression Inventory

Further correlation analyses *of* the Pearson correlation coefficients were done for each of the variables of the Experience of Work and Life Circumstances Questionnaire with the Beck Depression Inventory (BDI). Analyses were obtained for each marital status group (Appendix B). The three hypotheses that were investigated for all variables of the Experience of Work and Life Circumstances Questionnaire with the Beck Depression Inventory for marital status are as follows:

H_0: $\rho_{WLQ.BDI} = 0.00$
H_1: $\rho_{WLQ.BDI} \approx 1.00$
H_2: $\rho_{WLQ.BDI} \approx -1.00$

Further detailed information is presented in Appendix B. Accordingly, only the results of the main scales will be presented here.

For both the married and non-married groups significant and positive correlations were obtained for level of stress (LOS) and depression. The corresponding correlations were found to be 0.612 and 0.757 respectively.

For both the married and non-married subjects the most consistent co-relationship was found between level of stress and depression. This indicator correlated significantly with depression. Again high levels of perceived stress on this indicator co-related to high levels of depression and vice versa. The indicator confirmed the alternative hypothesis H_1.

9.5.3.4 Experience of Work and Life Circumstances Questionnaire with the Penn State Worry Questionnaire

The following correlation analyses of the Pearson correlation coefficients focused on the co-relation between each of the variables of the Experience of Work and Life Circumstances Questionnaire and the Penn State Worry Questionnaire (PSWQ), done for each marital status group (Appendix B). The three hypotheses that were investigated for all variables of the Experience of Work and Life Circumstances Questionnaire with the Penn State Worry Questionnaire for marital status are as follows:

H_0: $\rho_{WLQ.WORRY} = 0.00$
H_1: $\rho_{WLQ.WORRY} \approx 1.00$
H_2: $\rho_{WLQ.WORRY} \approx -1.00$

The reader is referred to Appendix B for detailed information. In the next section the focus will be on the results of only the main scales.

Once again significant and positive correlations for both marital status groups were found for level of stress (LOS) (OWS) and worry. The respective correlations were 0.425 for the married group and 0.695 for the non-married group.

Again the most consistent co-relationship was obtained for level of stress with worry for both the married and non-married subjects. This indicator correlated significantly with worry. High levels of perceived stress on this indicator co-related to high levels of worry and vice versa. The alternative hypothesis H_1 was thus confirmed for this indicator.

9.5.3.5 Experience of Work and Life Circumstances Questionnaire with the Social Problem-Solving Inventory-Revised

Correlation analyses of the Pearson correlation coefficients derived for each of the variables of the Experience of Work and Life Circumstances Questionnaire and each of the variables of the Social Problem-Solving Inventory-Revised (SPSIR) were done per marital status group (Appendix B). The three hypotheses that were investigated for all variables of the Experience of Work and Life Circumstances Questionnaire with all the variables of the Social Problem-Solving Inventory-Revised (SPSIR) for marital status are as follows:

H_0: $\rho_{WLQ.SPSIR} = 0.00$
H_1: $\rho_{WLQ.SPSIR} \approx 1.00$
H_2: $\rho_{WLQ.SPSIR} \approx -1.00$

The reader will find relevant detailed information analysis in Appendix B. Here only the results of the main scales will be presented.

For both marital status groups level of stress (LOS) correlated significantly but negatively with the main scale social problem solving (SPS). The corresponding correlation for the married group was -0.298 and that for the non-married group -0.426.

In the case of the married group, level of stress (LOS) correlated with four of the seven scales and subscales, namely positive problem orientation (PPO), negative problem orientation (NPO), impulsivity/carelessness style (ICS), and avoidance style (AS). For the non-married group the main LOS scale co-varied with three of the nine scales and subscales, namely positive problem orientation (PPO), negative problem orientation (NPO), and avoidance style (AS).

Regarding both the married and non-married subjects the most consistent co-relationships were found for level of stress and social problem solving. This indicator also correlated significantly with social problem solving. High levels of perceived stress on these indicators co-related to low levels of social problem solving and vice versa. The alternative hypothesis H_2 was confirmed in general for this indicator.

9.5.4 Age groups

9.5.4.1 *Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire*

Correlation analyses of the Pearson correlation coefficients for each of the variables of the Experience of Work and Life Circumstances Questionnaire associated with all of the variables of the Aggression in the Workplace Questionnaire (both experienced and witnessed) were undertaken for each of the four age groups (Appendix B). The three hypotheses that were postulated for all variables of the Experience of Work and Life Circumstances Questionnaire compared to all the variables of the Workplace Questionnaire (both experienced and witnessed), for the four age groups are as follows:

H_0: $\rho_{LOS,OWS.AWQ} = 0.00$ or H_0: $\rho_{IWSOF\text{-}IWSRF.AWQ} = 0.00$
H_1: $\rho_{LOS,OWS.AWQ} \approx 1.00$ H_1: $\rho_{IWSOF\text{-}IWSRF.AWQ} \approx -1.00$
H_2: $\rho_{LOS,OWS.AWQ} \approx -1.00$ H_2: $\rho_{IWSOF\text{-}IWSRF.AWQ} \approx 1.00$

Once again detailed statistical information is provided in Appendix B. Discussion of results will be limited to the main scales.

1) Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire-witnessed

The level of stress (LOS) scores for subjects belonging to the age group 20-29 and 40-49 did not correlate significantly with the witnessed total aggression (WTOT) scale of the AWQ. For the

age group 30-39 and 50 years or older a significant and positive correlation was obtained with witnessed total aggression (WTOT), namely 0.531 and 0.425 respectively. In both cases WTOT was supported by the three subscales, namely witnessed expressions of hostility (WEH), witnessed obstructionism (WOB), and witnessed overt aggression (WOV).

For the 20-29 and 40-49 year old subjects no significant correlation occurred between the indicators level of stress and witnessed total aggression. Associated levels of stress for both age groups generally confirmed the null hypothesis.

The most consistent co-relationships were found for the age groups 30-39 and 50 years or older for the indicator level of stress with witnessed total aggression in the workplace. This indicator, namely level of stress correlated significantly with witnessed total aggression in the workplace. Again high levels of perceived stress co-related to high levels of witnessed aggression in the workplace and vice versa. Thus this indicator once again confirmed the alternative hypothesis H_1.

2) Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire-experienced

For the age group 20-29 and 30-39 level of stress (LOS) scores correlated significantly and positively with experienced total aggression (ETOT) of the AWQ with the correlations being 0.572 for the former and 0.522 for the latter. In both analyses all three subscales, namely experienced expression of hostility (EEH), experienced obstructionism (EOB), and experienced overt aggression (EOV) confirmed the trends of the main scale. However for the age group 40-49 and 50 years or older no significant correlations could be traced.

For the age group 20-29 and 30-39 correlations between the indicator level of stress and experienced total aggression were the most consistent co-relationships. This indicator also correlated significantly with experienced total aggression in the workplace. High levels of stress on this indicator co-related to high levels of experienced aggression in the workplace and vice versa thus confirming the alternative hypothesis H_1.

Regarding the 40-49 year old and 50 years or older subjects, no significant correlation between the two main scales LOS and ETOT was obtained. In this case level of stress generally confirmed the null hypothesis.

9.5.4.2 Experience of Work and Life Circumstances Questionnaire with the IPAT Anxiety Scale

Analyses of relevant Pearson correlation coefficients for each of the variables of the Experience of Work and Life Circumstances Questionnaire associated with the each of the variables of the IPAT Anxiety Scale (IAS) were done for each age grouping (refer to Appendix B). The three hypotheses that were investigated for each of the variables of the Experience of Work and Life Circumstances Questionnaire associated with all of the variables of the IPAT Anxiety Scale per age groups are as follows:

H_0: $\rho_{LOS,OWS.IPAT} = 0.00$ or H_0: $\rho_{IWSOF\text{-}IWSRF.IPAT} = 0.00$
H_1: $\rho_{LOS,OWS.IPAT} \approx 1.00$ H_1: $\rho_{IWSOF\text{-}IWSRF.IPAT} \approx -1.00$
H_2: $\rho_{LOS,OWS.IPAT} \approx -1.00$ H_2: $\rho_{IWSOF\text{-}IWSRF.IPAT} \approx 1.00$

Detailed correlation coefficients appear in Appendix B. Hence only the results of only the main scales will be presented.

The level of stress (LOS) scores for the age groups 20-29, 30-39, 40-49, and 50 years or older correlated significantly and positively with the main scale, namely the total anxiety score (TAS) of the IAS producing corresponding correlations of 0.529, 0.554, 0.623, and 0.608 respectively. The main scale was supported by all of the subscales, namely factor -Q_3, factor Q_4, factor -C, factor L, factor O, Score A, and Score B in the case of the second and third age groups. In the case of the first age group it was supported only by five of the seven, namely factor -Q_3, factor Q_4, factor O, Score A, and Score B for the first age group and by six of the seven subscales, namely factor -Q_3, factor Q_4, factor -C, factor O, Score A, and Score B.

The most consistent co-relationship was obtained for level of stress associated with total anxiety for each of the four age groups, namely 20-29, 30-39, 40-49, and 50 years or older. The indicator level of stress for all four age groups correlated significantly with the scale total anxiety. High levels of stress on this indicator co-related to high levels of total anxiety and vice versa thus confirming the alternative hypothesis H_1.

9.5.4.3 Experience of Work and Life Circumstances Questionnaire with the Beck Depression Inventory

Correlation analyses of appropriate Pearson correlation coefficients derived from the association between each of the variables of the Experience of Work and Life Circumstances Questionnaire and the Beck Depression Inventory (BDI) were done for each of the four age groups (Appendix B). The three hypotheses that were investigated for all variables of the Experience of Work and Life Circumstances Questionnaire with the Beck Depression Inventory for the age groups are as follows:

H_0: $\rho_{WLQ.BDI} = 0.00$
H_1: $\rho_{WLQ.BDI} \approx 1.00$
H_2: $\rho_{WLQ.BDI} \approx -1.00$

The reader will find further detailed information in Appendix B. Only the results of the main scales will be presented here.

For all four age groups, namely 20-29, 30-39, 40-49, and 50 years or older a significant and positive correlation was found for level of stress (LOS) and the depression scale of the Beck Depression Inventory (BDI). The respective correlations for the four age groups were 0.649, 0.674, 0.627, and 0.754.

The most consistent co-relationship was delineated for level of stress and depression for subjects from the age groups 20-29, 30-39, 40-49, and 50 years or older. This indicator also correlated significantly with depression. High levels of stress on this indicator co-related to high levels of depression and vice versa thus confirming the alternative hypothesis H_1.

9.5.4.4 Experience of Work and Life Circumstances Questionnaire with the Penn State Worry Questionnaire

Correlation analyses deriving the Pearson Correlation Coefficients for each of the variables of the Experience of Work and Life Circumstances Questionnaire with the Penn State Worry Questionnaire (PSWQ) were obtained for the four age groups (Appendix B). The three hypotheses that were investigated for all variables of the Experience of Work and Life Circumstances Questionnaire with the Penn State Worry Questionnaire for the age groups are as follows:

H_0: $\rho_{WLQ.WORRY} = 0.00$
H_1: $\rho_{WLQ.WORRY} \approx 1.00$
H_2: $\rho_{WLQ.WORRY} \approx -1.00$

For a detailed analysis the reader is referred to Appendix B as the results of only the main scales will be presented.

For the subjects' belonging to the four age groups, namely 20-29, 30-39, 40-49, and 50 years or older a significant and positive correlation was obtained for their level of stress (LOS) scores. Their corresponding correlations were found to be 0.615, 0.498, 0.447, and 0.626 respectively.

Again the most consistent co-relationships were delineated for the age group 20-29, 30-39, 40-49, and 50 years or older for level of stress with worry. Once again these indicators correlated

significantly with worry. High levels of stress on any indicator co-related to high levels of worry and vice versa thus confirming the alternative hypothesis H_1.

9.5.4.5 Experience of Work and Life Circumstances Questionnaire with the Social Problem-Solving Inventory-Revised

Correlation analyses of the Pearson correlation coefficients for each of the variables of the Experience of Work and Life Circumstances Questionnaire being associated with each of the variables of the Social Problem-Solving Inventory-Revised (SPSIR) were done for the four age groups (Appendix B). The three hypotheses that were studied for all variables of the Experience of Work and Life Circumstances Questionnaire co-related with all the variables of the Social Problem-Solving Inventory-Revised (SPSIR) for the different age groups are as follows:

H_0: $\rho_{WLQ.SPSIR} = 0.00$
H_1: $\rho_{WLQ.SPSIR} \approx 1.00$
H_2: $\rho_{WLQ.SPSIR} \approx -1.00$

Detailed statistical information is included in Appendix B. The results of the main scales will be highlighted.

Level of stress (LOS) correlated significantly but negatively with the social problem solving (SPS) scale of the SPSIR with regard to the age groups 30-39 and 40-49, the respective values being -0.302 and -0.432. The main scale for the former was supported by three of the nine scales and subscales, namely negative problem orientation (NPO), impulsivity/carelessness style (ICS), and avoidance style (AS) and for the latter by four, namely positive problem orientation (PPO), negative problem orientation (NPO), problem definition and formulation (PDF), and impulsivity/carelessness style (ICS).

No significant correlations were observed for the age groups 20-29 and 50 years or older. Likewise, for these two age groups no significant correlations were found between the main scale SPS and level of stress thus generally confirming the null hypothesis.

In the case of the 30-39 and 40-49 year old subjects' the indicator level of stress, when associated with social problem solving, produced the most consistent co-relationship. Furthermore this indicator correlated significantly with social problem solving. High levels of perceived stress on this indicator co-related to low levels of social problem solving and vice versa. They thus confirmed the alternative hypothesis H_2.

9.5.5 Organization groupings

9.5.5.1 *Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire*

Correlation analyses next targeted the Pearson correlation coefficients between each of the variables of the Experience of Work and Life Circumstances Questionnaire and all of the variables of the Aggression in the Workplace Questionnaire (experienced and witnessed) and differentiated for each type of organization grouping (Appendix B). The three hypotheses that were investigated for all variables of the Experience of Work and Life Circumstances Questionnaire with all the variables of the Workplace Questionnaire-experienced and -witnessed for type of organization grouping are as follows:

H_0: $\rho_{WLQ.AWQ} = 0.00$
H_1: $\rho_{WLQ.AWQ} \approx 1.00$
H_2: $\rho_{WLQ.AWQ} \approx -1.00$

As usual detailed statistical data is presented in Appendix B. Hence, only the results of the main scales will be presented.

1) Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire-witnessed

From the results it can be seen that for both production/services organizations and academic/auxiliary service groupings the level of stress (LOS) scores of the subjects correlated significantly and positively with the main scale, namely witnessed total aggression (WTOT) of the AWQ. The respective correlation coefficients were found to be 0.406 and 0.652. The main scale trends in both cases were supported by all three subscales, namely witnessed expressions of hostility (WEH), witnessed obstructionism (WOB), and witnessed overt aggression (WOV). No significant correlations were obtained for the remaining two types of organization groupings.

For both financial and research and development organizations level of stress did not correlate significantly with witnessed total aggression. In this instance, the indicator level of stress therefore confirmed the null hypothesis.

Regarding production/services and academic/auxiliary services organizations the most consistent co-relationships were obtained for level of stress and witnessed total aggression. The indicator level of stress correlated again significantly with witnessed total aggression. High levels of perceived stress on this indicator co-related to high levels of witnessed aggression in

the workplace and vice versa. The alternative hypothesis H_1 was again confirmed in general for this indicator.

2) Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire-experienced

In the case of the financial, production/services, and academic/auxiliary services organization groupings, level of stress (LOS) correlated significantly and positively with the main AWQ scale, namely experienced total aggression (ETOT). The respective correlations were found to be 0.364, 0.354, and 0.283. The main scale trend for the first organization grouping was supported by experience expressions of hostility (EEH) and experienced overt aggression (EOV), for the second organization grouping by EEH and experienced obstructionism (EOB), and for the third organization grouping by all three subscales. No significant correlation could be delineated for research and development organizations.

For financial, production/services as well as academic/auxiliary organizations the most consistent co-relationship was found between level of stress and experienced total aggression. Again the indicator level of stress correlated significantly with experienced total aggression. High levels of perceived stress on this indicator co-related to high levels of experienced aggression in the workplace and vice versa. The alternative hypothesis H_1 was confirmed in general for this indicator.

Only in the case of research and development organizations was no significant correlation with level of stress found. Thus the indicator level of stress generally confirmed the null hypothesis.

9.5.5.2 Experience of Work and Life Circumstances Questionnaire with the IPAT Anxiety Scale

Correlation analyses next focused on those Pearson correlation coefficients calculated for each of the variables of the Experience of Work and Life Circumstances Questionnaire and each of the variables of the IPAT Anxiety Scale (IAS), done for each type of organization grouping (Appendix B). The three hypotheses that were investigated for each of the variables of the Experience of Work and Life Circumstances Questionnaire with all of the variables of the IPAT Anxiety Scale for type of organization grouping are as follows:

H_0: $\rho_{WLQ.IPAT} = 0.00$
H_1: $\rho_{WLQ.IPAT} \approx 1.00$
H_2: $\rho_{WLQ.IPAT} \approx -1.00$

The contents of Appendix B provide detailed information relevant to theses analyses. Once again the results of only the main scales will be presented.

Level of stress (LOS) correlated significantly and positively with the total anxiety score (TAS) of the IAS main scale, the conclusion holding for all four organization groupings, namely financial ($r = 0.717$), production/services ($r = 0.660$), research and development ($r = 0.451$), and academic/auxiliary organizations ($r = 0.434$). The main scale in the first and second case was supported by all seven IAS subscales, namely factor $-Q_3$, factor Q_4, factor -C, factor L, factor O, Score A, and Sore B. For the third organization grouping LOS co-related with six of the seven IAS subscales, namely factor $-Q_3$, factor Q_4, factor -C, factor O, Score A, and Sore B and in the last case by five of the seven subscales, namely factor Q_4, factor -C, factor O, Score A, and Sore B.

For financial, production/services, research and development, and academic/auxiliary services organizations the most consistent co-relationship was found between level of stress and total anxiety. The indicator level of stress correlated significantly with total anxiety. High levels of perceived stress on this indicator co-related to high levels of total anxiety and vice versa. The alternative hypothesis H_1 was confirmed in general for this indicator.

9.5.5.3 Experience of Work and Life Circumstances Questionnaire with the Beck Depression Inventory

Correlation analyses of the Pearson correlation coefficients between on the one hand each of the variables of the Experience of Work and Life Circumstances Questionnaire and on the other hand the Beck Depression Inventory (BDI) followed next done separately for each type of organization grouping (Appendix B). The three hypotheses that were investigated for all variables of the Experience of Work and Life Circumstances Questionnaire with the Beck Depression Inventory for type of organization grouping are as follows:

H_0: $\rho_{WLQ.BDI} = 0.00$
H_1: $\rho_{WLQ.BDI} \approx 1.00$
H_2: $\rho_{WLQ.BDI} \approx -1.00$

For a detailed analysis the reader is referred to Appendix B as the results of only the main scales will be presented.

A significant and positive correlation was obtained between level of stress (LOS) and depression, as measured by the Beck Depression Inventory (BDI), for all four types of organization groupings. The respective correlations were for financial organizations 0.738, production/services organizations 0.701, research and development organizations 0.498, and academic/auxiliary services organizations 0.619.

The most consistent co-relationships between level of stress and depression were observed with regard to financial, production/services, research and development, as well as academic/auxiliary services organizations. Again the indicator level of stress correlated significantly with depression. High levels of perceived stress on this indicator co-related to high levels of depression and vice versa. The alternative hypothesis H_1 was again confirmed in general for this indicator.

9.5.5.4 Experience of Work and Life Circumstances Questionnaire with the Penn State Worry Questionnaire

Correlation analyses based on the Pearson correlation coefficients obtained for each of the variables of the Experience of Work and Life Circumstances Questionnaire with the Penn State Worry Questionnaire (PSWQ), were done next by type of organization grouping (Appendix B). The three hypotheses that were investigated considered the co-variation between all variables of the Experience of Work and Life Circumstances Questionnaire and the Penn State Worry Questionnaire per type of organization grouping and are as follows:

H_0: $\rho_{WLQ.WORRY} = 0.00$
H_1: $\rho_{WLQ.WORRY} \approx 1.00$
H_2: $\rho_{WLQ.WORRY} \approx -1.00$

The reader might peruse Appendix B for more detailed information. Here the focus will be on the results of the main scales.

The subjects' level of stress (LOS) scores correlated significantly and positively with worry as measured by the Penn State Worry Questionnaire (PSWQ) for all four types of organization groupings, namely financial ($r = 0.452$), production/services ($r = 0.587$), research and development ($r = 0.485$), and academic/auxiliary services organizations ($r = 0.488$).

In the case of financial, production/services, research and development, and academic/auxiliary services organizations the most consistent co-relationship with worry appeared to be the level of stress. The indicator level of stress correlated significantly with worry. High levels of perceived stress on this indicator co-related to high levels of worry and vice versa. The alternative hypothesis H_1 was confirmed in general for this indicator.

9.5.5.5 Experience of Work and Life Circumstances Questionnaire with the Social Problem-Solving Inventory-Revised

Correlation analyses next were directed at the Pearson correlation coefficients relating to each of the variables of the Experience of Work and Life Circumstances Questionnaire and all the

variables of the Social Problem-Solving Inventory-Revised (SPSIR), once again done per type of organization grouping (Appendix B). The three hypotheses that were investigated for all variables of the Experience of Work and Life Circumstances Questionnaire and the Social Problem-Solving Inventory-Revised (SPSIR) by type of organization grouping are as follows:

H_0: $\rho_{WLQ.SPSIR} = 0.00$
H_1: $\rho_{WLQ.SPSIR} \approx 1.00$
H_2: $\rho_{WLQ.SPSIR} \approx -1.00$

The reader will find more detailed information in Appendix B. Thus only the results of the main scales will be discussed here.

The subjects' level of stress (LOS) scores correlated significantly but negatively with the main scale of the SPSIR, namely social problem solving (SPS) but for only financial (r = -0.530) and production/services organizations (r = -0.449). In the former case the main scale supported by eight of the nine subscales, namely positive problem orientation (PPO), negative problem orientation (NPO), rational problem solving (RPS), problem definition and formulation (PDF), generation of alternatives (GA), decision making (DM), impulsivity/carelessness style (ICS), and avoidance style (AS) and for the latter case by four scales and subscales of the SPSIR, namely positive problem orientation (PPO), negative problem orientation (NPO), impulsivity/carelessness style (ICS), and avoidance style (AS). No significant correlations could be found for research and development and academic/auxiliary services organizations.

Regarding financial and production/services organizations the most consistent co-relationship was found for level of stress associated with social problem solving. The indicator level of stress correlated significantly with social problem solving. High levels of perceived stress on this indicator co-related to low levels of social problem solving and vice versa. The alternative hypothesis H_2 was confirmed in general for this indicator.

In the case of research and development academic/auxiliary services organizations no significant co-relationships were found. The indicator level of stress generally confirmed the null hypothesis for both organization groupings.

9.5.6 Qualification groupings

9.5.6.1 *Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire*

Correlation analyses were also done on the Pearson correlation coefficients derived for each of the variables of the Experience of Work and Life Circumstances Questionnaire compared with

all of the variables of the Aggression in the Workplace Questionnaire (both experienced and witnessed), in this case for each the five qualification groupings (Appendix B). The three hypotheses that were investigated for all variables of the Experience of Work and Life Circumstances Questionnaire with all variables of the Aggression in the Workplace Questionnaire (experienced and witnessed) for each of the five qualification groupings are as follows:

H_0: $\rho_{WLQ.AWQ} = 0.00$
H_1: $\rho_{WLQ.AWQ} \approx 1.00$
H_2: $\rho_{WLQ.AWQ} \approx -1.00$

Detailed information is once more provided in Appendix B. Only the results of the main scales will be presented.

1) Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire-witnessed

From the results it can be seen that the subjects' level of stress (LOS) scores correlated significantly and positively with their scores on the AWQ, namely for witnessed total aggression (WTOT) for all subjects with Grade 12 or lower (r = 0.366), all holders of Diplomas (r = 0.359), Honours or equivalent degrees (r = 0.587), and Masters or Doctoral degrees (r = 0.393). For subjects with Grade 12 or lower or Honours or equivalent degrees, the main scale correlations were supported by all three subscales, namely witnessed expressions of hostility (WEH), witnessed obstructionism (WOB), and witnessed overt aggression (WOV). In the case of all subjects with Diplomas the main scale trend was supported by only WOB and for those with Masters or Doctoral degrees by WEH and WOV. No significant correlations with LOS were at all found for recipients of Bachelors degrees.

For subjects with Grade 12 or lower, holders of Diplomas, Honours or equivalent degrees, and for graduates with Masters or Doctoral degrees the most consistent co-relationship was found for level of stress when associated with witnessed total aggression. The indicator level of stress correlated significantly with witnessed total aggression. High levels of perceived stress on these indicators co-related to high levels of witnessed aggression in the workplace and vice versa. The alternative hypothesis H_1 was confirmed in general for this indicator.

In the case of holders of Bachelors degrees no significant co-relationship was obtained. The indicator level of stress generally confirmed the null hypothesis.

2) Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire-experienced

The subjects' level of stress (LOS) scores correlated significantly and positively with their scores on the main scale of the AWQ, namely witnessed total aggression (WTOT). The aforementioned conclusion held for all subjects with Grade 12 or lower (r = 0.378), those with Honours or equivalent degrees (r = 0.650), and for those with Masters or Doctoral degrees (r = 0.379). The main scale trend was supported by all three subscales, namely witnessed expressions of hostility (WEH), witnessed obstructionism (WOB), and witnessed overt aggression (WOV) in the case of subjects with Honours or equivalent degrees and holders of Masters or Doctoral degrees. In the case of subjects who had achieved Grade 12 or lower, the observed trend was supported by EEH and EOB. No significant correlations with LOS were obtained for holders of Diplomas or Bachelors degrees.

For those participants with Grade 12 or lower, Honours or equivalent degrees, or Masters or Doctoral degrees the most consistent co-relationship was found for level of stress when associated with experienced total aggression. The indicator level of stress correlated significantly with experienced total aggression. High levels of perceived stress on this indicator co-related to high levels of experience aggression in the workplace and vice versa. The alternative hypothesis H_1 was confirmed in general for this indicator.

In the case of all Diplomas and all Bachelors degrees no significant co-relationship was delineated. The indicator level of stress generally confirmed the null hypothesis.

9.5.6.2 Experience of Work and Life Circumstances Questionnaire with the IPAT Anxiety Scale

Correlation analyses aimed at the Pearson correlation coefficients that were obtained when comparing the variables of the Experience of Work and Life Circumstances Questionnaire with all the variables of the IPAT Anxiety Scale (IAS) were done for each qualification grouping (Appendix B). The three hypotheses that were investigated for each of the variables of the Experience of Work and Life Circumstances Questionnaire with all of the variables of the IPAT Anxiety Scale for qualification grouping are as follows:

H_0: $\rho_{WLQ.IPAT} = 0.00$
H_1: $\rho_{WLQ.IPAT} \approx 1.00$
H_2: $\rho_{WLQ.IPAT} \approx -1.00$

Appendix B once again contains relevant detailed information. The discussion hereafter will be limited to the results of the main scales.

Once more the subjects' level of stress (LOS) scores correlated significantly and positively with their total anxiety scores on the IAS, an assumption holding for all five qualification groupings, namely for those with Grade 12 or lower (r = 0.740), Diplomas (r = 0.597), Bachelor degrees (r = 0.582), Honours or equivalent degrees (r = 0.564), and Masters or Doctoral degrees (r = 0.447). In the case of subjects with grade 12 or lower the main scale trend was supported by all seven of the subscales of the IAS, namely factor -Q_3, factor Q_4, factor -C, factor L, factor O, Score A, and Sore B. For all holders of Diplomas, Honours or equivalent degrees, and Masters or Doctoral degrees the trend was supported by six of the seven subscales excluding factor -C for the first grouping, factor -Q_3 for the second grouping, and factor L for the last grouping. In the case of subjects with Bachelor degrees the main scale was supported by five of the subscales, namely factor Q_4, factor -C, factor O, Score A, and Sore B.

The most consistent co-relationship for all five qualification groupings, namely persons with Grade 12 or lower, Diplomas, Bachelors degrees, Honours or equivalent degrees, and Masters or Doctoral degrees was found when level of stress was associated with total anxiety. The indicator level of stress correlated significantly with total anxiety. High levels of perceived stress on this indicator co-related to high levels of total anxiety and vice versa. The alternative hypothesis H_1 was confirmed in general for this indicator.

9.5.6.3 Experience of Work and Life Circumstances Questionnaire with the Beck Depression Inventory

The following correlation analyses centred on Pearson correlation coefficients that were calculated for each of the variables of the Experience of Work and Life Circumstances Questionnaire related to the Beck Depression Inventory (BDI), and were done for each qualification grouping (Appendix B). The three hypotheses that were investigated for all comparisons involving the variables of the Experience of Work and Life Circumstances Questionnaire and the Beck Depression Inventory for the qualification groupings are as follows:

H_0: $\rho_{WLQ.BDI} = 0.00$
H_1: $\rho_{WLQ.BDI} \approx 1.00$
H_2: $\rho_{WLQ.BDI} \approx -1.00$

Further detailed information appears in Appendix B. As a result only the effect of the main scales will be presented.

Also in this case the subjects' level of stress (LOS) scores did correlate significantly and positively for all five qualification groupings, namely for subjects with Grade 12 or lower (r = 0.773, all holders of Diplomas (r = 0.757), Bachelor degrees (r = 0.439), Honours or equivalent degrees (r = 606), and Masters or Doctoral degrees (r = 0.614).

The most consistent co-relationship with depression was found for level of stress: this also held for all five qualification groupings, namely subjects with Grade 12 or lower, holders of Diplomas, Bachelors degrees, Honours or equivalent degrees, and for those with Masters or Doctoral degrees. The indicator level of stress correlated significantly with depression. High levels of perceived stress on this indicator co-related to high levels of depression and vice versa. The alternative hypothesis H_1 was confirmed in general for this indicator.

9.5.6.4 Experience of Work and Life Circumstances Questionnaire with the Penn State Worry Questionnaire

Correlation analyses were done by means of the Pearson correlation coefficients that resulted for the association of each of the variables of the Experience of Work and Life Circumstances Questionnaire with the Penn State Worry Questionnaire (PSWQ) and were undertaken per qualification grouping (Appendix B). The three hypotheses that were investigated by associating all variables of the Experience of Work and Life Circumstances Questionnaire with the Penn State Worry Questionnaire, done for each qualification grouping, are as follows:

H_0: $\rho_{WLQ.WORRY} = 0.00$
H_1: $\rho_{WLQ.WORRY} \approx 1.00$
H_2: $\rho_{WLQ.WORRY} \approx -1.00$

The reader will once more find detailed information in Appendix B. Here the results of only the main scales will be presented.

The subjects' level of stress scores correlated significantly and positively with worry for four of the five qualification groupings, namely for participants with Grade 12 or lower ($r = 0.601$, Diplomas ($r = 0.508$), Honours or equivalent degrees ($r = 0.590$), and Masters or Doctoral degrees ($r = 0.531$). Only in the case of graduates with Bachelor degrees no significant correlations were obtained.

The most consistent co-relationship with worry was found for level of stress, a trend that held for four of the five qualification groupings, namely for those with Grade 12 or lower, Diplomas, Honours or equivalent degrees, and Masters or Doctoral degrees. The indicator level of stress noticeably correlated with worry. High levels of perceived stress on this indicator co-related to high levels of worry and vice versa. The alternative hypothesis H_1 in general was confirmed in general for this indicator. However in the case of persons with Bachelors degrees no significant correlation with the indicator level of stress was found. Thus for this qualification grouping the null hypothesis was confirmed.

9.5.6.5 Experience of Work and Life Circumstances Questionnaire with the Social Problem-Solving Inventory-Revised

Correlation analyses of all Pearson correlation coefficients derived from the comparison of all the variables of the Experience of Work and Life Circumstances Questionnaire with every variable of the Social Problem-Solving Inventory-Revised (SPSIR) were done next per qualification grouping (Appendix B). The three hypotheses that were investigated for all variables of the Experience of Work and Life Circumstances Questionnaire with all the variables of the Social Problem-Solving Inventory-Revised (SPSIR) for qualification grouping are as follows:

H_0: $\rho_{WLQ.SPSIR} = 0.00$
H_1: $\rho_{WLQ.SPSIR} \approx 1.00$
H_2: $\rho_{WLQ.SPSIR} \approx -1.00$

More detailed information appears in Appendix B. Hence only the results of the main scales will be presented.

The subjects' level of stress (LOS) scores correlated significantly but negatively with their scores on the main scale of SPSIR, namely social problem solving (SPS), but only for subjects with Grade 12 or lower ($r = -0.614$) or Masters or Doctoral degrees ($r = -0.313$). The remaining qualification groupings did not produce significant correlations. For participants with Grade 12 or lower, the main scale trend was supported by all nine scales and subscales of the SPSIR, namely positive problem orientation (PPO), negative problem orientation (NPO), rational problem solving (RPS), problem definition and formulation (PDF), generation of alternatives (GA), decision making (DM), solution implementation and verification (SIV), impulsivity/carelessness style (ICS), as well as avoidance style (AS). In the case of participants with Masters or Doctoral degrees the trend was supported by only three of the scales and subscales, namely positive problem orientation (PPO), negative problem orientation (NPO), and avoidance style (AS).

The most consistent co-relationship with level of stress was found for social problem solving but for only two of the five qualification groupings, namely subjects with Grade 12 or less or Masters or Doctoral degrees. The indicator level of stress correlated significantly with social problem solving. High levels of perceived stress on this indicator co-related with low levels of social problem solving and vice versa. In general the alternative hypothesis H_1 was confirmed for this indicator. However in the case of all participants with Diplomas, Bachelors degrees, or Honours or equivalent degrees, no significant correlation with the indicator level of stress was found. Thus for these three qualification groupings the null hypothesis was confirmed.

9.5.7 Position levels

9.5.7.1 *Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire*

Correlation analyses of relevant Pearson correlation coefficients arising from the comparisons of each of the variables of the Experience of Work and Life Circumstances Questionnaire with those of the Aggression in the Workplace Questionnaire, for both experienced and witnessed aggression, were done for each of the three position levels (Appendix B). The three hypotheses that were investigated for all variables of the Experience of Work and Life Circumstances Questionnaire with all the variables of the Workplace Questionnaire-experienced and -witnessed for the three position levels are as follows:

H_0: $\rho_{WLQ.AWQ} = 0.00$
H_1: $\rho_{WLQ.AWQ} \approx 1.00$
H_2: $\rho_{WLQ.AWQ} \approx -1.00$

More detailed statistical information appears in Appendix B. Here the results of the main scales will be presented.

1) Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire-witnessed

Level of stress (LOS) scores of the subjects' correlated significantly and positively with their witnessed total aggression scores (WTOT) on the AWQ, a trend that held for all three position levels, namely senior management ($r = 0.335$), middle management ($r = 0.484$), and specialist staff ($r = 0.387$). For participants from senior management, middle management as well as specialist staff, the main scale WTOT was supported by all three of the subscales of the AWQ, namely witnessed expression of hostility (WEH), witnessed obstructionism (WOB), and witnessed overt aggression (WOB).

For all three position levels, namely senior management, middle management, and specialist staff the most consistent co-relationship with level of stress was found for witnessed total aggression. The indicator level of stress correlated significantly. High levels of perceived stress on this indicator co-related to high levels of witnessed aggression in the workplace and vice versa. The alternative hypothesis H_1 was confirmed in general for this indicator.

2) Experience of Work and Life Circumstances Questionnaire with the Aggression in the Workplace Questionnaire-experienced

The subjects' level of stress (LOS) scores correlated significantly and positively with their experienced total aggression (ETOT), as measured by the AWQ, producing coefficients of 0.549 in the case of middle management, and 0.356 in the case of specialist staff. No significant correlation was delineated for senior management.

The main scale ETOT for both middle management and specialist staff was supported by two of the three subscales of the AWQ, namely witnessed expression of hostility (WEH) and witnessed obstructionism (WOB).

Again the most consistent co-relationship was found for level of stress but only for those from the middle management level and among specialist staff. The indicator level of stress correlated significantly with experienced total aggression. High levels of perceived stress on this indicator co-related to high levels of experienced aggression in the workplace and vice versa. In the case of middle management and specialist staff the alternative hypothesis H_1 was confirmed in general for this indicator. Senior management on the other hand did not correlate significantly with the indicator level of stress thus confirming the null hypothesis.

9.5.7.2 Experience of Work and Life Circumstances Questionnaire with the IPAT Anxiety Scale

Correlation analyses based on Pearson correlation coefficients pertaining to each of the variables of the Experience of Work and Life Circumstances Questionnaire and those of the IPAT Anxiety Scale (IAS) were done once again for each individual position level (Appendix B). The three hypotheses that were investigated for each of the variables of the Experience of Work and Life Circumstances Questionnaire with all of the variables of the IPAT Anxiety Scale for the three position levels are as follows:

H_0: $\rho_{WLQ.IPAT} = 0.00$
H_1: $\rho_{WLQ.IPAT} \approx 1.00$
H_2: $\rho_{WLQ.IPAT} \approx -1.00$

The reader is referred to Appendix B for more detailed information. Here the results of only the main scales will be highlighted.

A significant and positive correlation was obtained for level of stress with the total anxiety score of the IAS for the three position levels, namely senior management ($r = 0.611$), middle management ($r = 0.504$), and specialist staff ($r = 0.610$).

The main scale for both senior and middle management was supported by all seven subscales of the IAS, namely factor -Q_3, factor Q_4, factor -C, factor L, factor O, Score A, and Sore B. However for specialist staff the main scale was supported by five of the seven subscales excluding factor -C and factor L.

For all three position levels, namely senior management, middle management, and specialist staff, level of stress once again produced the most consistent co-relationship. This indicator correlated significantly with total anxiety. High levels of perceived stress on this indicator co-related with high levels of total anxiety and vice versa. For all three position levels the alternative hypothesis H_1 was confirmed in general for this indicator.

9.5.7.3 Experience of Work and Life Circumstances Questionnaire with the Beck Depression Inventory

The next correlation analyses focused on Pearson correlation coefficients for calculated for each of the variables of the Experience of Work and Life Circumstances Questionnaire as they related to the Beck Depression Inventory (BDI) and were obtained for each position level (Appendix B). The three underlying hypotheses that were formulated for all variables of the Experience of Work and Life Circumstances Questionnaire with the Beck Depression Inventory for the three position levels are as follows:

H_0: $\rho_{WLQ.BDI} = 0.00$
H_1: $\rho_{WLQ.BDI} \approx 1.00$
H_2: $\rho_{WLQ.BDI} \approx -1.00$

Detailed co-relational information is provided in Appendix B. Results of the main scales will be presented here.

The level of stress (LOS) scores of the subjects' correlated significantly and positively with depression, namely for all three position levels, that is for participants from senior management ($r = 0.727$), middle management ($r = 0.617$), and specialist staff ($r = 0.534$).

The most consistent co-relationship for the three position levels, namely senior management, middle management, and specialist staff, was the level of stress. The indicator level of stress correlated significantly with depression. High levels of perceived stress on this indicator co-related with high levels of depression and vice versa. In general the alternative hypothesis H_1 was confirmed for this indicator.

9.5.7.4 Experience of Work and Life Circumstances Questionnaire with the Penn State Worry Questionnaire

The penultimate correlation analyses targeted those Pearson correlation coefficients that were produced when comparing each of the variables of the Experience of Work and Life Circumstances Questionnaire with the Penn State Worry Questionnaire (PSWQ) scores: analyses were done for each of the three position levels (Appendix B). The three hypotheses that were investigated for all variables of the Experience of Work and Life Circumstances Questionnaire with the Penn State Worry Questionnaire for the three position levels are as follows:

H_0: $\rho_{WLQ.WORRY} = 0.00$
H_1: $\rho_{WLQ.WORRY} \approx 1.00$
H_2: $\rho_{WLQ.WORRY} \approx -1.00$

Detailed information appears in Appendix B. Here only the results of the main scales will be discussed.

Again for all three position segments, the level of stress (LOS) scores of the subjects' correlated significantly and positively with worry, namely for senior management ($r = 0.610$), middle management ($r = 0.367$), and for specialist staff ($r = 0.512$).

For the three position levels, namely senior management, middle management, and specialist staff, the most consistent co-relationship with worry again was found to be the level of stress. This particular indicator correlated significantly with worry. High levels of perceived stress on this indicator co-related with high levels of worry and vice versa. For all three position levels the alternative hypothesis H_1 in general was confirmed for this indicator.

9.5.7.5 Experience of Work and Life Circumstances Questionnaire with the Social Problem-Solving Inventory-Revised

The final correlation analyses investigated all Pearson correlation coefficients derived at by associating each of the variables of the Experience of Work and Life Circumstances Questionnaire with each of the variables of the Social Problem-Solving Inventory-Revised (SPSIR), and were done for each of the three position levels (Appendix B). The three hypotheses that were investigated for all variables of the Experience of Work and Life Circumstances Questionnaire with all the variables of the Social Problem-Solving Inventory-Revised (SPSIR) for position levels are as follows:

H_0: $\rho_{WLQ.SPSIR} = 0.00$
H_1: $\rho_{WLQ.SPSIR} \approx 1.00$
H_2: $\rho_{WLQ.SPSIR} \approx -1.00$

Appendix B contains further detailed information. The results of the main scales will be presented here.

Again the subjects' level of stress (LOS) scores correlated significantly but negatively with the social problem solving scale of the SPSIR, but only for two of the three position levels, namely senior (r = -0.342) and middle management (r = -0.421). No significant correlation was found for the specialist staff category. Three of the nine scales and subscales of the SPSIR supported the main scale trend, namely negative problem orientation (NPO), impulsivity/carelessness style (ICS), and avoidance style (AS) with regard to senior management. In the case of middle management the main scale was supported by four of the nine scales and subscales, namely positive problem orientation (PPO), negative problem orientation (NPO), impulsivity/carelessness style (ICS), and avoidance style (AS).

For senior and middle management the most consistent co-relationship with social problem solving once again proved to be level of stress. The indicator level of stress correlated significantly with social problem solving. High levels of perceived stress on this indicator co-related to low levels of social problem solving and vice versa. For these two position levels the alternative hypothesis H_1 was confirmed in general for this indicator. However in the case of specialist staff no significant correlations could be found. Thus in this case the indicator level of stress in general confirmed the null hypothesis.

9.6 Effect size, d

The effect size was calculated by means of of the d-transformation formula:

$$d = \frac{\bar{x}_1 - \bar{x}_2}{S_{pooled}}$$

where subscript 1 designated the arithmetic mean of the total sample (or experimental group) and subscript 2 to that of the subsample (or control group). Any bias was corrected using the following formula (Hedges & Olkin in Coe, 2000):

$$d_{corrected} \cong d \times \left(1 - \frac{3}{\{4(N_E + N_C) - 9\}}\right)$$

9.7 Conclusion

Quantitative analysis of the scored data collected by means of the questionnaires was completed. It included descriptive statistics for the variables measured by each questionnaire, determination of the Cronbach alpha reliability coefficients for each of these instruments, inferential statistics including z-tests, t-tests for related groups, general linear modelling with ANOVA option, Scheffé tests, the determination of Pearson correlation coefficients between the various variables measured by the tests, and effect size with respect to the total group, the two genders, the four age groups, the two marital categories, the four business sectors, the five qualification divisions, and the three position levels. The results obtained allow the researcher to determine the similarities and differences that occur for this specific group of participants as a whole, but also for the five biographical variables. Also the Pearson correlation coefficients give the researcher an indication of the underlying relationships that exist between the dependent an independent variables. The results obtained in the analysis as outlined in this chapter will now be interpreted and discussed in more detail in the following chapter.

CHAPTER 10

DISCUSSION

10.1 Introduction

The purpose of this chapter is to discuss the findings obtained for the quantitative analysis of the scored data collected by means of the questionnaires. The discussion will focus on Cronbach's alpha reliability coefficients, inferential statistics and a range of Pearson correlation coefficients calculated for the total group, the two genders, the four age groups, as well as for the two marital categories, the four business sectors, the five qualification groupings, and the three position levels with reference to the eight scales of the Experience of Work and Life Circumstances Questionnaire, the four scales for both experienced and witnessed aggression of the Aggression in the Workplace Questionnaire, the eight IPAT Anxiety Scales, the Beck Depression Inventory, the Penn State Worry Questionnaire, and the ten scales and subscales of the Social Problem-Solving Inventory–Revised. Effect size will also be briefly considered. A number of shortcomings and implications for further research will be made based on the results and the discussion.

10.2 Cronbach alpha reliability coefficients

10.2.1 Experience of Work and Life Circumstances Questionnaire

The Experience of Work and Life Circumstances Questionnaire (WLQ) was developed by the HSRC for the South African context to assess the levels of overall stress and the different sources of stress experienced by the individual in the workplace (Van Zyl & Van der Walt, 1991: 1).

The Cronbach alpha reliability coefficient was determined for the WLQ and its subscales. Good to very good reliability could be demonstrated for all the subscales and the overall scale. In comparison, Van Zyl and Van der Walt (1991: 21) reported reliability coefficients for all of the subscales ranging from 0.83 to 0.92 (KR) compared to 0.74 to 0.95 obtained in this study. There is no immediate further need to re-evaluate the reliability of this questionnaire. The scales can therefore be interpreted with confidence both in research and in counselling.

10.2.2 Aggression in the Workplace Questionnaire

Baron and Neuman (1996: 161) developed the Aggression in the Workplace Questionnaire (AWQ) to assess non-violent types of aggression that individuals either witness or experience in the workplace.

The Cronbach alpha reliability coefficient was determined for the AWQ and its main and subscales. All subscales produced adequate to good reliability, with coefficients ranging from 0.57 to 0.91 for witnessed aggression and from 0.60 to 0.92 for experienced aggression. Coefficients of 0.94 for the overall scale of witnessed aggression and 0.95 for experienced aggression were calculated. The estimates supported effective use of the questionnaire in organizational research and individual counseling. No comparative data was available as Baron and Neuman (1996: 161) did not report any reliability coefficients.

10.2.3 IPAT Anxiety Scale

The IPAT Anxiety Scale was developed as a brief, non-stressful instrument to measure anxiety.

Again the Cronbach alpha reliability coefficient was calculated for the IPAT Anxiety Scale and its eight scales. All of the eight scales had very good reliability coefficients with their values ranging from 0.84 to 0.98. For purposes of comparison, Cattell, Scheier, and Madge (1995: 5) reported reliability estimates based only on the total score, and these ranged from 0.78 to 0.83 (Ferguson's variation on Kuder-Richardson 20) depending on the sample. For the specific sample under consideration in this study the reliability coefficient for the total score was 0.98. The results are indicative that the IPAT Anxiety Scale may be used with confidence in research and individual counselling.

10.2.4 Beck Depression Inventory

The Beck Depression Inventory (BDI) was developed as a brief and efficient means of detecting and determining the severity of depression. McDowell and Newell (in Michalak *et al*, 2004: 100) generally consider it to be one of the best screening tools for depression.

The Cronbach alpha reliability coefficient was also obtained for the BDI. A coefficient of 0.95 was achieved, indicating very good reliability. In a literature review focusing on the psychometric properties of the BDI with both psychiatric and non-psychiatric samples, mean coefficient alphas of 0.86 for the former and 0.81 for the latter were obtained (Beck *et al*, 1988: 80). The result confirms that the BDI may be used with confidence in both research and counselling.

10.2.5 Penn State Worry Questionnaire

The Penn State Worry Questionnaire (PSWQ) was developed to research the phenomenon of worry and its relationship to anxiety.

The Cronbach alpha reliability coefficient for the 16-item PSWQ was determined and judged to have a very high reliability, namely a coefficient of 0.91. Comparatively it has been found to possess high internal consistency in both college samples (Davey; Ladouceur *et al*; Meyer *et al* in Molina & Borkovec, 1994: 269) and in a large sample of persons with mixed anxiety disorders and GAD clients (Brown *et al* in Molina & Borkovec, 1994: 269). In these studies the coefficient alphas varied from 0.86 to 0.95. Again the result indicated that the questionnaire might be used with confidence in both research and counselling.

10.2.6 Social Problem-Solving Inventory–Revised

The Social Problem-Solving Inventory-Revised (SPSIR) was developed to assess the social problem solving abilities of individuals.

Cronbach alpha reliability coefficients for the scales and subscales were calculated and showed good to very good reliability with values ranging from 0.73 to 0.94. These results compare well with those reported in the manual of the SPSIR (D'Zurilla, Nezu, & Maydeu-Olivares, 2002: 56), where the reliability coefficients for the SPSIR in four different samples for all five scales of the SPSI-R showed adequate to high internal consistency with the coefficient alpha varying from 0.69 to 0.95. The test-retest reliability for two samples was also adequate to high varying from 0.68 to 0.91 (D'Zurilla, Nezu, & Maydeu-Olivares, 1996: 19). The result once more supports confident use of the questionnaire in both research and counselling.

10.3 Experience of stress and its consequences

10.3.1 Total sample, gender, marital status, and age

The subjects that made up the total sample generally reported low levels of stress, which was a good indication that they did not experience negative circumstances which otherwise would have led to the experience of negative feelings, such as restlessness, irritability, boredom, and guilt for example. Subjects generally did not feel that their circumstances whether within or outside the workplace contributed to any significant levels of stress, whether due to causes outside the workplace such as problems at home, finances, health, transport among others, organizational functioning, task characteristics, physical working conditions and job equipment, career matters,

social matters, or remuneration, fringe benefits and personnel policy. Furthermore when it came to subjects' expectations regarding their work situation, concerning organizational functioning, task characteristics, physical working conditions and job equipment, career matters, social matters, or remuneration, fringe benefits and personnel policy, the results showed that these were generally met for most subjects. When looking at the level of stress the subjects belonging to the sample experienced, it was found to fall within the normal range. In general the number of subjects falling within the normal range fell between 70.9% and 89.8% depending on the variable (Appendix A). These results to some extent paralleled the results Van Zyl (in Van Zyl, 2002: 26) reported in an investigation conducted in South Africa. He found that 34.7% of Coloureds, 38.1% of Whites and Asians, and 35% of black South Africans experienced high levels of stress. Correspondingly both male and female subjects experienced similar low levels of stress as well as perceiving their circumstances and expectations within the workplace as satisfactory. Generally the result corresponds with the research regarding males and females when performing the same type of job and positioned at the same level (Torkelson & Muhonen, 2003: 177). Furthermore no significant differences could be found between the married and the non-married groups for seven of the eight variables of the Work and Life Experiences Questionnaire. The married, single and divorced subjects experienced similar low levels of stress and also perceived their circumstances and expectations as satisfactory, except in the case of stress due to causes outside the work situation. Married subjects reported lower levels of stress due to causes outside the workplace than the single and divorced subjects. This meant that the married group found their circumstances outside the workplace far more satisfactory than their single and divorced counterparts. This difference was not surprising as one could expect that married subjects with intact marriages would experience less stress and less of a spill over into the workplace. Regarding age, the results also showed insignificant differences between the different age categories implying that a specific age category did not impact on the individual's level of stress and experience of his or her circumstances both within and outside the workplace. However when age was combined with organization grouping, it impacted on the subjects' experience of their circumstances and expectations for task characteristics and remuneration, fringe benefits and personnel policy (see section 10.3.2.3). In the case of age and qualification, it only affected remuneration, fringe benefits and personnel policy (see section 10.3.2.1).

Stress is hypothesized to impact upon an individual specifically within the context of the workplace. Stress experienced due to the demands and stressors placed on the individual may lead to behavioural, psychological, and physical consequences. The research focussed on one possible behavioural outcome, namely the witnessing and experience of workplace aggression and three possible psychological consequences.

The first ramification that was considered was that of witnessed and experienced aggression. The results showed that subjects of the entire sample generally did not witness or experience significant levels of workplace aggression in its varying forms. This result could be expected based on the fact that the entire group experienced low levels of stress and that they judged their circumstances and expectations to be within tolerable levels. Expressions of hostility, such as belittling others' opinions, talking behind their backs, obstructionism, such as failure to return phone calls or respond to memos, failure to transmit needed information, interfering with activities important to the target, and overt aggression, for example physical assault, theft or destruction of property, threats of physical violence, therefore, occurred at low levels within those environments in which participants operated. This did not impact significantly over the long term. Neuman and Baron (1998: 398) report that expressions of hostility occur more often than either obstructionism or overt aggression that also is the least prevalent. Furthermore the results suggest that workplace aggression is witnessed more often than actually experienced by the subjects. The Pearson correlations did confirm significant relationships between the level of stress experienced by the subjects and the level of witnessed and experienced aggression in the workplace. In both cases low levels of stress were associated with low levels of witnessed and experienced aggression in the workplace. No significant differences with regard to witnessed aggression were found between males and females which meant that both groups witnessed similar low levels of workplace aggression in its various forms. In the case of experienced aggression a significant difference was found for experienced obstructionism (for example failing to return phone calls or respond to memos, failing to transmit information needed by the target, et cetera). Here males experienced significantly higher levels of aggression than their female co-workers. It is generally assumed that males more often than their female counterparts resort to aggression (Bettencourt & Miller in Rutter & Hine, 2005: 254). Rutter and Hine (2005: 262) confirmed these findings within the workplace. They found that males more often than females engaged in all three types of aggression, namely expressions of hostility, obstructionism, and overt aggression. The Pearson correlation coefficients suggest significant relationships between the experience of stress and witnessed as well as experienced aggression in the workplace. By implication the experience of stress was linked to low levels of witnessed aggression for both males and females and low levels of experienced aggression in the workplace only for females. Males on the other hand did not show such an association with experienced aggression. The Pearson correlations described significant relationships between the experiences of stress by both genders and witnessed as wells as experienced aggression.

With regard to both witnessed and experienced aggression the subjects belonging to both marital status groups did not differ significantly from one another and therefore most married, single and divorced subjects witnessed and experienced similar low levels of aggression within the workplace.

Both groups obviously worked in environments where they witnessed and experienced few expressions of hostility, low levels of obstructionism, and overt aggression. No specific research could be found to in the literature to support this finding. The magnitude of the Pearson correlations suggests a significant relationship between the experience of stress and witnessed as well as experienced aggression in the workplace.

Significant differences occurred in the four age brackets, specifically for witnessed and experienced overt aggression. More specifically the age group 20-29 years witnessed higher levels of overt aggression in the workplace than subjects in the remaining age groups. Furthermore the age group 30-39 also witnessed higher levels of over aggression compared to subjects in the age group 40-49 as well as in the age group 50 years and older. Subjects found in the age group 50 years of age and older experienced higher levels of over aggression in the workplace than subjects found in any of the remaining age groups. Here the findings of the Pearson correlation suggest significant relationships between the experience of stress and witnessed aggression for only the subjects found in age groups 30-39 and 50 years or older. The other two age groups were not affected by the witnessing of aggression in the workplace. However a significant relationship also was delineated between the experience of stress and experienced aggression in the workplace for only the subjects belonging to the 20-20 and 30-39 year old age groups.

The second ramification involved the experience of anxiety as determined by the IPAT Anxiety Scale. The results implied that the subjects as a group could be described as having adequate levels of ego strength and lacking in ego weakness, showing neither too high levels of trust or suspiciousness, and that they were neither inclined towards untroubled adequacy or guilt proneness. Furthermore they reported average levels of defective integration and lack of self-sentiment, as well as average levels of frustrative tension. The sample also experienced average levels of covert hidden anxiety and overt, symptomatic, and conscious anxiety. Also most of the subjects experienced average levels of total anxiety. In general the subjects comprising the sample therefore could be described as well adjusted. This result again was predictable based on the fact that the group did not report high levels of stress and problems regarding their circumstances or their expectations. Low levels of wellbeing are often defined, amongst others, as including anxiety (Salmela-Aro in Kaukianen *et al*, 2001: 362). Terluin *et al* (2004: 195) also found that the levels of anxiety in a working population were very low. Absence of significant levels of anxiety in the sample implies that most of the subjects experienced a sense of wellbeing that could be characteristic of subjects who were generally well adjusted. The Pearson correlations also confirmed a significant relationship between the level of stress experienced by the subjects and the level of total anxiety reported. Low levels of stress were associated with low levels of anxiety. Males and females had

similar average levels of trust and suspiciousness as well as covert hidden anxiety. Females however did differ from males in that they had slightly less ego strength and more ego weakness, a greater tendency to guilt proneness and lower tendency towards untroubled adequacy, were more prone to defective integration and lack of self-sentiment as well as frustrative tension, higher levels of overt, symptomatic, and conscious anxiety, and generally a higher level of total anxiety. Although differences did occur, these were still within the average range.

The findings of the two marital status groups, furthermore, did not differ with regard to their levels of suspiciousness, frustrative tension and covert hidden anxiety. Subjects belonging to the married group differed from the single and divorced subjects in that they had slightly more ego strength and less ego weakness, a lesser tendency to guilt proneness and higher tendency towards untroubled adequacy, less prone to defective integration and lack of self-sentiment, a lower level of overt, symptomatic, and conscious anxiety, and generally a slightly lower level of total anxiety. The result probably could be better understood in terms of social support. The size of the Pearson correlation suggests a significant relationship between the experience of stress and total anxiety. No specific differences were found for subjects belonging to each of the age categories. Pearson correlations suggest significant relationships between the experience of stress and total anxiety for both genders, marital status groups, and the four age categories.

A third possible outcome of stress is depression. To ascertain the level of depression the Beck Depression Inventory was used. The subjects that made up the sample reported significantly low levels of depression. Again this result could be predicted as low levels of stress were reported, as well as no particular problems due to their circumstances or expectations. The most common indicators associated with absence of wellbeing are depression and depressive symptoms (Salmela-Aro in Kaukianen *et al*, 2001: 362; Terluin *et al*, 2004: 195). The absence of any significant levels of depression in the sample could thus be again indicative of a sense of general wellbeing. Here the Pearson correlation confirmed a significant relationship between the level of stress experienced by the subjects and the level of depression reported. Low levels of stress were associated with low levels of depression. No statistically significant differences could be found between the two genders, marital status groups, and four age categories. This meant that males and females, subjects belonging to one of the marital status groups, and subjects belonging to the four age categories experienced similar low levels of depression. The magnitudes of the Pearson correlation also suggest significant relationships between the experience of stress and depression for both genders, both marital status groups, and all four age categories.

Next the role of worry was considered. To obtain a measure of worry the Penn State Worry Questionnaire was used. It was found that most subjects that made up the sample reported significantly low levels of worry. Worry is seen as a form of task-oriented coping, a form of problem solving, specifically at a non-clinical level (Davey in Keogh, French, & Reidy, 1998: 68). Furthermore worry has often been found to be related to the level of anxiety (Davey in Keogh *et al*, 1998: 67). This result could be expected as the subjects, a non-clinical sample, only reported low levels of both anxiety and worry, and generally good levels of social problem solving (see next paragraph). The Pearson correlations again confirmed a significant relationship between the level of stress experienced by the subjects and the level of worry found. Thus the low levels of stress were also associated with low levels of worry. However a statistically significant difference between males and female subjects and married and single or divorced subjects was found. Despite the relevant levels of worry being low, females compared to males, tended to worry significantly more. Similarly non-married subjects worried more than married subjects. In the case of the subjects belonging to the four age groupings no significant differences were obtained for the level of worry. The findings of the Pearson correlations also suggest significant relationships between the experience of stress and worry for both genders, both marital status groups, and all of the four age groupings.

Finally to answer the question as to how the subjects that made up the sample coped with stress the Social Problem-Solving Inventory-Revised was used. The results showed that most of the subjects in the sample had a high positive problem orientation, a corresponding low negative problem orientation, good rational problem solving skills, which included good problem definition and formulation abilities, significant abilities to generate alternatives, effective decision making abilities, adequate ability to implement and verify solutions, a limited tendency to resort to an impulsivity and/or carelessness as well as an avoidance style, that all added up to high levels of total social problem solving ability. The results meant that most of the subjects had a general disposition that allowed them to appraise a problem as a challenge rather than a threat, a believe that any problem was solvable, basic trust that they had the ability to solve a problem, a willingness to put in time and effort, persistence and generally to commit themselves to solving a problem at hand. They also would not easily become frustrated and upset when dealing with a given problem. When the majority of subjects applied themselves to a given problem, they were able to carefully and systematically gather facts and information, identify demands and obstacles, set problem-solving goals, generate a variety of alternatives, and then choose and implement a solution whilst carefully monitoring and evaluating outcomes. For most of the subjects their attempts at problem-solving were not narrow, impulsive, careless, hurried, and incomplete. Furthermore they were not plagued by procrastination, passivity or inaction, and dependency. In general D'Zurilla and Chang

(D'Zurilla, Nezu, & Maydeu-Olivares, 2002: 61) found that especially positive problem orientation and rational problem solving were related to the adaptive, problem-engagement coping strategies, which the individual 'uses to either change the stressful situation for the better through direct action, or change the meaning of the situation to make it less threatening'. Furthermore negative problem orientation was found to correlate significantly with psychological distress and general psychological symptomatology (Chang & D'Zurilla in D'Zurilla, Nezu, & Maydeu-Olivares, 2002: 63).The findings of the Pearson correlation suggest a significant relationship between the experience of stress and social problem solving in general. Furthermore the highest contribution to the main scale is made by negative problem orientation supporting the earlier findings for Chang and D'Zurilla (Chang & D'Zurilla in D'Zurilla, Nezu, & Maydeu-Olivares, 2002: 63). Thus the results not only suggest that low levels of experienced stress is associated with high levels of social problem solving, but also associated with low levels of negative problem orientation.

No significant differences could be found between male and female subjects for seven of the scales and subscales of the Social Problem-Solving Inventory-Revised except with regard to negative problem orientation, generation of alternatives, and overall problem solving ability. Females had a greater negative problem orientation, a lesser ability to generate alternatives, and a lesser overall problem solving ability. Females tended to see a problem as slightly more threatening to their wellbeing, were slightly more pessimistic, slightly doubted their ability to solve problems successfully, and becoming a little more frustrated and upset when confronted with problems of existence. Due to these slight differences the total problem- solving score was slightly lower for the females than for the males but still occurred within the range of effectiveness. Gender differences were also found in some studies (D'Zurilla in D'Zurilla, Nezu, & Maydeu-Olivares, 2002: 55). However the only consistent difference throughout these studies was that women scored higher on the negative problem orientation-scale than men. The present study did overlap with the literature regarding the negative problem orientation-scale. The findings of the Pearson correlation suggest a significant relationship between the experience of stress and social problem solving in general.

Significant differences could be found between the married and the non-married groups regarding their positive and negative problem orientation, rational problem-solving abilities, impulsivity and carelessness style, avoidance style, and overall problem-solving ability. Although the married subjects appear to outperform single and divorced subjects regarding their ability to define and formulate a problem, this conclusion was confounded by the fact that differences also occurred within the groups. The remaining results implied that the married subjects had a general disposition that would allow them to appraise a problem slightly better as a challenge rather than a threat, to believe that a problem was more solvable, to trust that they had the ability to solve the problem

more, to be willing to put in the time and effort more, persist and generally commit themselves more to solving the problem at hand than the single and divorced subjects. They would also be somewhat less easily frustrated and upset when dealing with a given problem. The married subjects were able to apply themselves to a given problem more effectively than the single and divorced subjects and they were able to carefully and systematically gather facts and information slightly more effectively, identify demands and obstacles better, while carefully monitoring and evaluating the outcome better. Both groups could equally well generate a variety of alternatives, set a problem-solving goal, and then choose and implement a solution. The married subjects generally were fractionally better off than their single and divorced counterparts in their attempts at problem solving. No research findings have been reported in the literature regarding marital status. The findings of the Pearson correlation suggest a significant relationship between the experience of stress and social problem solving in general for both marital status groups.

Again no significant differences regarding most of the subjects belonging to the four different age groups with regard to problem solving were found except in the case of subjects who were between 40 and 49 years old and who felt that they were more effective in generating alternatives than their counterparts who were between 20 to 29 years of age. The former also perceived themselves as more effective generators of alternatives than the subjects who were 50 years or older. The Pearson correlations for the four age groups suggest significant relationships between the experience of stress and age specifically for the subjects belonging to the age groups 30-39 and 40-49. This result could be understood in terms of the type of work they could be involved in and the level of experience within that field.

10.3.2 Type of organization grouping

An analysis of variance was done on each of the eight variables of the Work and Life Experiences Questionnaire to determine which of the four types of organization groupings the subjects worked for could be described as the most stressful. Subjects employed in all four groups of organizations, namely financial, production/services, research and development, as well as academic/auxiliary services, experienced very similar low levels of stress. The subjects working for any one of the various types of organization groupings experienced their circumstances, for instance outside the workplace, organizational functioning, and social matters, as satisfactory. Similarly their expectations regarding organizational functioning and social matters were also fulfilled. However significant differences for both their circumstances and expectations were found with regard to task characteristics, physical working conditions and job equipment, career matters, and remuneration, fringe benefits and personnel policy. Subjects working in research and development organizations

found task characteristics far more problematic than those subjects working in financial, production/services or academic/auxiliary services organizations. Subjects working in academic/auxiliary services apparently found their physical working conditions and job equipment far more bothersome than those working in financial, research and development, as well as in production/services organizations. Subjects found in financial and research and development organizations reported similar levels of problems but both still had greater levels than production/services organizations (Academic or auxiliary services > financial = research and development > production or services). Subjects working for financial or production/services organizations did not differ significantly in their assessment of career matters nor did the subjects working for academic/auxiliary services or research and development organizations. However subjects belonging to the former two organization groupings experienced career matters as less worrisome than subjects working for the latter (academic/auxiliary services = research and development > financial = production/services). For those subjects working in academic/auxiliary organizations remuneration, fringe benefits and personnel policy was experienced far more worrisome than for those working in financial, production/services or research and development organizations. Those subjects in financial organizations found it more perturbing than those in research and development organizations. Interestingly no differences were found between financial and production/services organizations as well as between production/services as well as the research and development organizations.

The first ramification to be considered was that of witnessed and experienced aggression. In terms of the four organizational groupings no differences could be found between them for each type of witnessed or experienced aggression. Thus the subjects working in the four types of organization groupings witnessed and experienced similar low levels of workplace aggression whether expressions of hostility, obstructionism, or overt aggression. For the second ramification the subjects in each type of organization grouping reported similar levels of lack of ego weakness and ego strength, lower levels of suspiciousness, guilt proneness, defective integration and lack of self-sentiment, frustrative tension, average levels of overt and covert anxiety, as well as total anxiety. In the case of the third and fourth ramification, for example depression and worry the subjects found in each type of organization grouping experienced similar low levels of depression and worry. No specific differences between the four types of organizational groupings and social problem solving could be delineated.

The findings of the Pearson correlation suggest a significant relationship between the experience of stress and witnessed aggression for production/services and academic/auxiliary services organizations. It did not play a role in financial or research and development organizations. For

financial, production/services, and academic/auxiliary organizations a significant relationship also existed between the experience of stress and experienced aggression in the workplace. Finally significant relationships occurred between the experience of stress and total anxiety, depression, and worry for subjects working in all four types of organization groupings. Furthermore these findings also suggest a significant relationship between the experience of stress and social problem solving in general but only for subjects working for financial and production/services organizations.

10.3.2.1 Organization grouping with qualification level

The role that the level of qualifications played for the subjects regarding their experience of stress, their circumstances within and without the workplace and their expectations within the workplace within each organization was ascertained. The level of qualification did not impact on their experience of stress nor did their circumstances regarding causes outside the workplace, their physical working conditions and job equipment, and social matters as well as their expectations regarding their physical working conditions and job equipment and social matters reflect the role of qualification. However significant differences were found for organizational functioning, task characteristics, career matters, and remuneration, fringe benefits and personnel policy. Only the most significant results will be presented.

Firstly, with regard to organizational functioning, subjects with a Masters or Doctors degree working in an academic/auxiliary services environment differed from thirteen other organization-qualification combinations, with participants employed in financial organizations and holding Masters or Doctors degrees, in research and development organizations with a Grade 12 or lower or a Bachelor degree, and academic/auxiliary services organizations with a Grade 12 or lower, or Diploma or a Bachelor degree, being the exceptions. Throughout they experienced organizational functioning with their work environment as more problematic than the others.

When it came to task characteristics the qualification level of the subjects also played an important role. Here the most important was for subjects working for research and development organizations with Diplomas which differed significantly from nine other organization-qualification combinations. Essentially they found task characteristics far less bothersome those working in financial organizations with a Grade 12 or lower, a Diploma, a Bachelors degree, an Honours or equivalent degree, production/services organizations with a Grade 12 or lower or a Bachelors degree, and academic/auxiliary organizations with Diplomas, Bachelors degrees or Masters or Doctoral degrees. In the case of career matters qualification differences did play and important role. Most significantly subjects working in academic/auxiliary services organizations with a Masters or

Doctoral degree experienced career matters as more worrisome than subjects working in financial organizations with a Grade 12 or lower, a Diploma, and Bachelors degree, in production/services organizations with a Diploma, a Bachelors degree, an Honours or equivalent degree, and a Masters or Doctoral degree, in research and development organizations with a Bachelors degree and a Masters or Doctoral degree, and in academic/auxiliary services organization with an Honours or equivalent degree. Also subjects working in academic/auxiliary services organizations with a Diploma found career matters more problematic than subjects found in financial organizations with Grade 12 or lower, a Diploma, and a Bachelors degree, in production/services organizations with a Diploma, an Honours or equivalent degree, and a Masters or Doctoral degree, in research and development with a Bachelors degree, and in academic/auxiliary services organizations with an Honours or equivalent degree.

Finally for remuneration, fringe benefits and personnel policy qualification also played an important role. Firstly for subjects working in academic/auxiliary organizations with a Masters or Doctoral degree experienced remuneration, fringe benefits and personnel policy as greater concern than subjects working in financial organizations with a Grade 12 or lower and a Bachelors degree, in production/services organizations with a Diploma, a Bachelors degree and an Honours or equivalent degree, in research and development organizations with a Diploma, a Bachelors degree and a Masters or Doctoral degree. Similarly subjects working in financial organizations with an Honours or equivalent degree also found remuneration, fringe benefits and personnel policy as more problematic than subjects working in financial organizations with a Bachelors degree, in production/services with a Diploma, a Bachelors degree and an Honours or equivalent degree, in research and development organizations with a Diploma, a Bachelors degree and a Masters or Doctoral degree. However subjects working in research and development with a Diploma felt more satisfied with their remuneration, fringe benefits and personnel policy than subjects working in financial organizations with a Grade 12 or lower, an Honours or equivalent degree and Masters or Doctoral degree, in production/services organizations with a Grade 12 or lower, in academic/auxiliary services organizations with a Diploma, a Bachelors degree and an Honours or equivalent degree.

The first ramification to be assessed was that involving witnessed and experienced aggression. In terms of type of organization grouping and qualification specific differences could be found for only witnessed overt aggression. More specifically, subjects working in production/services organizations and who had a Grade 12 or lower witnessed higher levels of overt aggression in the workplace than subjects working in six other organization-qualification groupings, when compared to subjects working in financial organizations and had a Grade 12 or lower, or in financial

organizations and had a Diploma, who worked in production/services organizations and had an Honours or equivalent degree, who worked in research and development organizations and had a Bachelor degree or Masters or Doctoral degree, and who were found in academic/auxiliary services organizations and had an Honours or equivalent degree. However when considering experienced aggression, the subjects also experienced significant differences when it came to experienced overt aggression. The most significant results involved those subjects that worked in production/services organizations and had a Grade 12 or lower experienced the higher levels of overt aggression than their counterparts form fourteen other organization-qualification groupings, namely from subjects who worked in financial services organizations and had a Grade 12 or lower, or Diploma, or a Bachelors degree, or an Honours or equivalent degree, who worked in production/services organizations and had a Diploma, or an Honours or equivalent degree, or a Masters or Doctoral degree, who worked in research and development organizations and who had a Diploma, or a Bachelors degree, or an Honours or equivalent degree, or a Masters or Doctoral degree, who a worked in academic/auxiliary services organizations and had a Bachelors degree, or an Honours or equivalent degree, or a Masters or Doctoral degree. Also the subjects with a Bachelor degree working in production/services organizations experienced higher levels of overt aggression than subjects from nine other organization-qualification groupings, namely from subjects who worked in financial organizations and had a Grade 12 or lower, or with a Diploma, or with a Bachelors degree, production/services organizations with a Diploma, or with and Honours or equivalent degree, or with a Masters or Doctoral degree, who worked in research and development organizations and had a Diploma, or Masters or Doctoral degree, and who worked in academic/auxiliary services organizations and who had an Honours or equivalent degree.

For the second ramification the subjects in each organization-qualification combination reported similar levels of lack of ego weakness and ego strength, low levels of suspiciousness, guilt proneness, defective integration and lack of self-sentiment, frustrative tension, average levels of overt and covert anxiety, as well as total anxiety. This was also the case for the third and fourth ramification. Subjects again experienced similar low levels of depression and worry.

The fifth ramification, namely social problem solving was assessed. The subjects reported a similarly high positive problem orientation and a corresponding low negative problem orientation, high levels of rational problem solving ability, good problem definition and formulation ability, a good ability to generate alternatives, effective decision making as well as solution implementation and verification abilities, a low impulsivity/carelessness and avoidance style, and a high overall social problem solving ability.

10.3.2.2 Organization grouping with position level

The role that the position level played regarding the subjects' experience of stress, their circumstances within and without the workplace, and their circumstances within the type of organization grouping was also ascertained. Significant results were found only regarding their circumstances and expectations for task characteristics. Only the most significant results will be presented.

The most significant comparison involved subjects found in the specialist staff category and working in research and development organizations. They described task characteristics as more problematic compared to subjects working in financial organizations in senior management, middle management, and as specialist staff, in production/services in senior management, middle management and as specialist staff, research and development organizations in senior and middle management, and in academic/auxiliary organizations in senior management and as specialist staff.

When it came to the first ramification the subjects found in each organization grouping-position level combination both witnessed and experienced similar low levels workplace aggression. Put in another way they did not witness or experience worrying expressions of hostility, high levels of obstructionism, or overt aggression. For the second ramification the subjects in each organization grouping-position level combination reported similar levels of lack of ego weakness and ego strength, low levels of suspiciousness, guilt proneness, defective integration and lack of self-sentiment, frustrative tension, average levels of overt and covert anxiety, as well as total anxiety. Again for the third and fourth ramification the subjects working in each organization grouping-position level combination experienced similar low levels of depression and worry.

The fifth ramification, namely social problem solving was evaluated. Again no significant differences could be found regarding the subjects social problem solving abilities in general. However the only exception was found specifically for subjects working in financial organizations as specialist staff who considered themselves more effective at generating alternatives than subjects working in financial organizations and working in senior management, in production/services organizations in senior management and as specialist staff, in research and development organizations in senior management, and who worked in academic/auxiliary services organizations in senior management, middle management, and as specialist staff. The opposite was true for subjects working in academic/auxiliary services organization. These participants being active at the level of middle management, felt that they were less good at generating alternatives than subjects working in

financial organizations and found and operating at both senior management and specialist staff level, in production/services organizations found in middle management, as well as in research and development organizations and also found in middle management.

10.3.2.3 Organization grouping with age

Age also played a significant role regarding both the circumstances and the expectations the subjects had for task characteristics and remuneration, fringe benefits and personnel policy within their respective organization groupings. They had similar low level of stress and they experienced their circumstances outside the work situation as well as within the organization grouping for organizational functioning, physical working conditions and job equipment, career matters, and social matters as satisfactory. Similarly their expectations for organizational functioning, physical working conditions and job equipment, career and social matters seemed to be met.

The most important result involved subjects between 30 to 39 years of age and working in academic/auxiliary organizations that found task characteristics more bothersome than those working in financial organizations between 20 and 29 years of age, and 30 and 39 years of age, production/services organizations between 30 and 39 years of age and 50 years of age or older, in research and development organizations between 30 and 39 years of age, 40 and 49 years of age, and 50 years or older, and in academic/auxiliary services organizations 50 years of age or older. Also those subjects 50 years of age or older that worked if financial organizations also experienced task characteristics as more perturbing than subjects working in financial organizations between 20 and 29 years of age, in production/services organizations between 30 and 39 years of age and 50 years of age or older, in research and development organizations between 30 and 39 years of age, 40 and 49 years of age, and 50 years of age or older, and in academic/auxiliary services organizations 50 years of age or older.

With regard to the impact of age, those subjects working in research and development organizations and between 40 and 49 years of age found remuneration, fringe benefits and personnel policy felt more satisfactory than their counterparts between the ages of 40 and 49 years and who worked in financial organizations, those of 50 years or older in production/services organizations, and participants from 20 all the way up to 50 years or older and working in academic/auxiliary services organizations, However subjects working in academic/auxiliary services organizations and being aged 30 and 39 years reported a greater concern with their remuneration, fringe benefits and personnel policy than fellow participants also aged between 30 an 39 years and working in financial organizations or production/services organizations or in

research and development organizations and being 30 to 39 years old, between 40 and 49 years and 50 years of age or older. Similarly subjects aged between 30 and 39 years and working in academic/auxiliary services organizations found their remuneration, fringe benefits and personnel policy more worrisome compared to their counterparts working in financial organizations production/services organizations and being aged between 30 and 39 years, as well as working in research and development organizations and being aged from 30 to 50 years or older.

The first ramification to be considered was that of witnessed aggression. In terms of the four organization grouping-age combinations significant differences could be found between them and only witnessed overt aggression. Actually the youngest age group 20-29 witnessed relatively more acts of workplace aggression than the subjects of the older groupings. Also the age group 30-39 witnessed more than the remaining older two groups. However regarding the experience of aggression in the work context the subjects belonging to the oldest group reported higher levels of experienced overt aggression than any of the remaining age groups.

For the second ramification the subjects in each organization grouping-age combination reported similar levels of lack of ego weakness and ego strength, low levels of suspiciousness, guilt proneness, defective integration and lack of self-sentiment, frustrative tension, overt and covert anxiety, as well as total anxiety. Again in the case of the third and fourth ramification the subjects working in each organization grouping-age combination experienced similar low levels of depression and worry. The fifth ramification, namely social problem solving was also assessed. The subjects reported similar good levels of social problem solving in general.

10.3.3 Qualification level

The role of the level of qualification had on the subjects was also determined. However no significant differences between each category for the subjects could be found implying that qualification on its own did not impact on their experience of stress. Furthermore they experienced their circumstances outside the work situation and within the workplace as favourable. Similarly an analysis of the responses confirmed that the qualifications of subjects did not impact on their expectations they had within the workplace regarding organizational functioning, task characteristics, physical working conditions and job equipment, career matters, social matters, and remuneration, fringe benefits and personnel policy. However when it came to organization grouping taken with qualification level it did affect some of the variables as discussed previously.

The first ramification to be considered for qualification was that of witnessed and experienced aggression. In terms of the five qualification levels no differences could be found between them for each form of witnessed or experienced aggression. Thus the subjects witnessed and experienced similar low levels of workplace aggression whether expressions of hostility, obstructionism, or overt aggression. In the case of the second ramification the subjects in each qualification grouping reported similar levels of lack of ego weakness and ego strength, low levels of suspiciousness, guilt proneness, defective integration and lack of self-sentiment, frustrative tension, overt and covert anxiety, as well as total anxiety. For the third and fourth ramification, the subjects found in each qualification grouping reported similar low levels of depression and worry. The fifth ramification, namely social problem solving was also evaluated. The subjects reported similar levels of social problem solving in general.

The Pearson correlation did highlight a significant relationship between the experience of stress and qualification level. With regard to witnessed aggression, the relationships for four of the five qualification groupings, with subjects having Bachelors degrees being the exception, were significant. For experienced aggression it was only applicable to Grade 12 or lower, Honours and equivalent degrees, and Masters or Doctoral degrees. For total anxiety and depression it was applicable to all five qualification levels. In the case of worry it applied to four of five qualification levels, with the exception of those holding Bachelors degrees. Finally for social problem solving a significant relationship was suggested for Grade 12 or lower and Masters or Doctoral degrees.

10.3.3.1 Qualification level with age

The role of qualification level and age for the eight variables of the work and life circumstances questionnaire was assessed. Only remuneration, fringe benefits and personnel policy showed significant differences. It was found that the subjects that had a Diploma and were between the ages of 30 and 39 found their remuneration, fringe benefits and personnel policy more satisfying than their counterparts with a Grade 12 or lower and between the ages of 30 and 49, with a Diploma and 50 years of age or older, with an Honours or equivalent degree and between 20 and 29 and 40 and 49 years, and with a Masters or Doctoral degree and 50 years of age or older.

The first ramification to be considered was that of witnessed and experienced aggression. In terms of the five qualification groupings with age, differences could be found specifically for experienced overt aggression. Specifically subjects who had a Grade 12 or lower and were 50 years or older, experienced higher levels of overt aggression than their counterparts from all the other qualification-age groupings.

For the second ramification the subjects in each qualification-age combination reported similar levels of lack of ego weakness and ego strength, low levels of suspiciousness, guilt proneness, defective integration and lack of self-sentiment, frustrative tension, average levels of overt and covert anxiety, as well as total anxiety. With regard to the third and fourth ramification the subjects again experienced similar low levels of depression and worry. In the case of the fifth ramification the subjects reported similar levels of social problem solving in general.

10.3.3.2 Qualification level with position level

Throughout the subjects in each qualification-position level combination reported similar low levels of stress. They also experienced their circumstances as good regarding stress due to causes originating outside the work situation, organizational functioning, task characteristics, physical working conditions and job equipment, career matters, social matters, and remuneration, fringe benefits and personnel policy. Furthermore their expectations were met when it came to organizational functioning, task characteristics, physical working conditions and job equipment, career matters, social matters, and remuneration, fringe benefits and personnel policy.

No differences were observed for the first ramification, namely witnessed and experienced aggression in the workplace. Again the subjects reported low levels of both witnessed and experienced expressions of hostility, obstructionisms, or overt aggression at work. For the second ramification the subjects in each organization reported similar levels of lack of ego weakness and ego strength, low levels of suspiciousness, guilt proneness, defective integration and lack of self-sentiment, frustrative tension, overt and covert anxiety, as well as total anxiety. Regarding the third and fourth ramification the subjects also experienced similar low levels of depression and worry. The fifth ramification, namely social problem solving was assessed. Here the subjects reported good levels of social problem solving in general.

10.3.4 Position level

The role that the position level played was also determined. Again the results showed no significant differences implying that position level on its own did not impact on the level of stress, nor did it affect the participants' experience of their circumstances within or without the workplace negatively. Also their expectations regarding organizational functioning, task characteristics, physical working conditions and job equipment, career matters, social matters, and remuneration, fringe benefits and personnel policy were met. However, when position level within an organization grouping was

considered, it did impact on their experience of their circumstances and expectations when it came to task characteristics as discussed previously.

The first ramification to be considered was that of witnessed and experienced aggression. In terms of the three position levels no differences could be found between them for each form of witnessed or experienced aggression in the workplace. Thus they neither witnessed nor experienced bothersome levels of expressions of hostility, obstructionisms, or overt aggression at work. For the second ramification the subjects working in each position reported similar levels of lack of ego weakness and ego strength, low levels of suspiciousness, guilt proneness, defective integration and lack of self-sentiment, frustrative tension, average levels of overt and covert anxiety, as well as total anxiety. When considering the third and fourth ramification, namely depression and worry, the subjects found in the different position levels experienced similar low levels of depression and worry. The fifth ramification, namely social problem solving, was evaluated. The subjects again reported good levels of social problem solving in general.

10.3.4.1 Position level with age

Subjects, irrespective of their position level-age combinations, reported similar levels of stress and they found their circumstances worthwhile both within and without the workplace. They also found their expectations regarding organizational functioning, task characteristics, physical working conditions and job equipment, career matters, social matters, and remuneration, fringe benefits and personnel policy being met.

When it came to the first ramification subjects did not differ regarding any forms witnessed aggression. However respondents that were in middle management and who were 50 years or older, experienced higher levels of overt aggression than their counterparts found in ten other position level-age groupings, namely from subjects who were in senior management and ranged from 20 to 29 years of age, or 30 to 39 years of age, or 40 to 49 years of age, or 50 years or older, who were in middle management and ranged from 20 to 29 years of age, or 30 to 39 years of age, or 40 to 49 years of age, and who worked as specialist staff and ranging from 20 to 29 years of age, or 30 to 39 years of age, or 40 to 49 years of age.

For the second ramification the subjects in each position level-age combination reported similar levels of lack of ego weakness and ego strength, low levels of suspiciousness, guilt proneness, defective integration and lack of self-sentiment, frustrative tension, average levels of overt and covert anxiety, as well as total anxiety. In the case of the third and fourth ramifications again no

differences were found with regard to depression and worry. In the case of the fifth ramification, namely social problem solving the subjects reported similar levels of social problem solving in general.

10.4 Coping

The question arises as to how to explain the results of the present study, namely why were the majority of subjects able to cope effectively with the stressors occurring outside as well as within the organization. The first possibility is to consider the role of the organization. Is it possible that the organizations involved in the study were doing something right? At the time the questionnaire was completed the researcher was not aware that any of the organizations involved in the study were implementing stress management interventions such as job and task redesign for example. Some of the sectors within the financial and production/services organizations made use of an EAP which on a regular basis presented stress management courses. This awareness may have impacted on the individual but cannot be regarded as something the organization did to reduce or change the impact of organizational stressors. It is well known that in contemporary organizations employees are more likely to experience multiple environmental stressors in the workplace within a 2-to 3-year period (Sikora *et al*, 2004: 11). The types of stressors may be either chronic or acute. Furthermore changes, whether extraorganizational or occurring within the organization, whether on a macro or micro level, do not occur sequentially but more often simultaneously. Change and stress are inevitable within any organization.

What then could explain the fact that most of the subjects experienced acceptable levels of overall stress and generally found that their circumstances and expectations fell within normal levels and thus manageable? What is each individual doing that allows him or her to deal effectively with chronic and acute stressors arising from their work environment? The most likely explanation lies with the individuals that make up the sample. These participants can be viewed as individuals who have the necessary resources, strengths and skills to either manage or resolve their concerns (Presbury *et al*, 2002: 208). Furthermore the subjects' ability to deal effectively with the demands and stressors may be due to eustress (Nelson & Simmons, 2002: 104). They view the stress response as both positive and negative, the former indicated by the presence of positive psychological states (e.g., positive affect, meaningfulness, and hope), and the latter indicated by the presence of negative psychological states (such as negative affect). Eustress may reflect 'the extent to which cognitive appraisal of a situation or event is seen to either benefit an individual or enhance his or her well-being'. Most situations including work are expected to elicit both positive

and negative responses in individuals. Probably the majority of subjects in the sample were able to accentuate the positive.

Generally the literature focuses on two general coping strategies that may influence the outcome: emotion-focused and problem-focused or active coping (Elfering *et al*, 2005: 238). Wellbeing is generally associated negatively with emotion-focused coping and positively with problem-focused coping (Parker & Endler, in Elfering, 2005: 238). Emotion-focused coping is associated with situations where the controllability is low and with behaviours such as withdrawal, self-blame, or smoking a cigarette for example. On the other hand problem-focused coping is associated with circumstances where controllability is high and with attempts to change the situation. Emotion-focused coping has been measured in a problematic way leading to the perception that it is maladaptive. Instead it has also been shown to lead to positive outcomes (Elfering *et al*, 2005: 240, Stanton *et al*, 2005: 150). Strategies include ways to regulate emotions such as calming down in stressful situations (Perrez & Reicherts in Elfering *et al*, 2005: 239) or the use of emotional processing and expression (Stanton *et al*, 2005: 150). Social support, whether outside or within the workplace, may play an important role in the latter case.

One approach to problem-focused or active coping is through the use of problem solving. How individuals appraise their problem solving skills and whether they generally approach or avoid the many problem situations they may be confronted with determines not only how they cope with problems but also their social and psychological adjustment (Heppner & Lee, 2005: 290). Individuals that see themselves as good problem solvers are more likely to exhibit lower levels of depression and hopelessness under high stress conditions. Furthermore they tend to experience lower levels of anxiety and anger. Generally these individuals also exhibit help-seeking behaviour. Therefore the results may be understood in terms of the participants' ability to use a problem-focused or active coping approach, namely social problem solving. As active coping is seen as having a protective function, either through its direct positive effect on the outcome or as a moderator of the stressor-symptom relationship (Snow *et al*, 2003: 243) it may be concluded that social problem solving as a specific form of active coping does the same. Furthermore researchers have shown that problem solving is significantly related to adjustment deficits and psychological distress, such as depressive symptomatology (Nezu in D'Zurilla *et al*, 2002: 5), anxiety (Nezu and Nezu & Carnevale in D'Zurilla *et al*, 2002: 5), and aggression (D'Zurilla *et al* in D'Zurilla *et al*, 2002: 62). The more effective an individual was with problem solving the lower these indicators were. Worry on the other hand was found to relate to positive problem orientation but not to the actual problem-solving skills (Dugas *et al*, 1995: 117). Also effective problem solving has been shown to impact positively on psychological wellbeing amongst others (Chang & D'Zurilla in D'Zurilla *et al*,

2002: 5). It may be concluded that social problem solving and specifically a high level of positive problem orientation, a low negative problem orientation, good rational problem solving skills, a low impulsivity/carelessness and avoidance style and thus generally a high overall social problem solving score enabled the participants to deal with the demands and stressors within and without the workplace thus also minimizing the negative consequences.

10.5 Overall assessment of effect size

Generally the effect sizes in the investigation under consideration were low, mainly varying between -0.10 to 0.10. The important question that needs to be answered is: How did this impact upon the results of the present study? Organizations participating in this study were involved in a wide range of institutional activities and represented different work spheres that directly or indirectly contributed to South Africa's economy. This state of affairs implied a significant degree of institutional heterogeneity which might be associated with large effect sizes.

However, the subjects that participated in the research were all drawn from two management levels and specialized staff from these institutions. Whilst acknowledging heterogeneity, this final intervention in the composition of the sample implied a greater degree of homogeneity among participating individuals, which would be commensurate with lower effect sizes, as is confirmed by the above range of effect sizes. In using and judging effect size, a researcher needs to assess the presence of homogeneity and/or heterogeneity by accounting for all personal, environmental, institutional, and other relevant factors that might impact upon the population, composition of the sample, and potential results of an intended study.

10.6 Some limitations of the present research

The first limitation of the present study is that no specific information was obtained to determine the individual differences that predispose individuals to cope effectively with stress. Nelson and Simmons (2002: 108) suggest that possible factors that may be included in such studies are amongst others optimism, locus of control, hardiness, self-reliance, and sense of coherence. These factors are also seen as promoting eustress. Factors like these would account for more positive primary appraisals with regard to the demands or stressors placed on them. Also it may influence at a secondary appraisal level the individuals' belief that they may more effectively handle a demand or stressor.

A second limitation of the present study is that a convenience sample was used, consisting of senior management, middle management, and specialist staff components specific to only four organizational sectors and which does not represent all fields of management, types of organizations, and ethnic distribution of all South African managers and specialist staff. The results can therefore not be generalized to the broad spectrum of South African managers and specialist staff.

A third limitation of the present study may be associated with the fact that only self-report data were obtained. While self-report measures are often revealing and accurate, they can also be plagued by many sources of error and bias, such as subjects presenting themselves in a positive light, which can affect the validity of their self-reports (Leak & Parsons, 2001: 23; Bartz *et al*, 1996: 248). It would seem important to develop alternative measures and to incorporate other sources of data. Alternative or complementary sources of information may be obtained from human resources, from one on one or group interviews, and the use of diaries for example.

10.7 Further research

Further research should focus on workplace stress to determine factors that may mediate the individual's response to stress that allows him or her to cope effectively with the demands and stressors in and outside the workplace. These could include such factors as optimism, locus of control, hardiness, self-reliance, and sense of coherence. With regard to workplace aggression further research could focus on the actual frequency of workplace aggression and changes taking place within the organization. Furthermore future research should focus on the application and teaching of problem solving as a skill to aid those employees that are not dealing effectively with the demands and stressors within the workplace. Other areas of interest could include the role of emotion-focused coping thus focusing on the ability of the employee to emotionally adapt to the stressful work situation.

10.7 Conclusion

The study set out to determine the levels and the causes of workplace stress as well as the consequences of stress in terms of aggression in the workplace, both witnessed and experienced, anxiety, depression, and worry for a group of 205 subjects. It also set out to assess the subjects' ability to cope with the experienced stressors with regards to social problem solving. Generally it was found that the subjects experienced normal levels of stress, witnessing and experiencing low levels of workplace aggression, normal levels of anxiety, low levels of depression and worry. Their

ability to cope with the daily stressors in terms of social problem solving showed that they generally had an overall high social problem solving ability and consequently normal levels of stress. The possible explanation of the results was thought to be due to the role problem-focused or active coping in the form of social problem solving played for participants dealing effectively with the demands and stressors experienced in the workplace. The results may also be understood in terms of the five stage model of Cox and McKay (Cox, 1978:18; Cox & MacKay, 1981: 101) which was used as the basis in the development of the Work and Life Experiences Questionnaire (see section 3.2.4.1).

Cox (1978: 19) describes the first stage as representing 'the sources of demand relating to the person' and it forms part of the individual's environment. The demands and stressors impacting on the individual both within and without the organization were measured. The second stage, which consists of the individual's perception of the demands and stressors and his or her ability to cope with these, was also measured. Although it may be expected that the individual will experience different demands and stressors in the workplace, he or she will not experience stress until he or she has reached his or her limitations. The third stage is associated with the physical changes as well as cognitive and behavioural responses. These aim to reduce the immediate impact of the demands and stressors. Here the role of problem-focused coping or active through social problem solving was found to play an important role. For most participants their positive problem orientation as well as their rational problem solving abilities came into play enabling them to deal effectively with the perceived demands and stressors found within and without their workplace. The fourth stage focuses on the consequences of the coping responses, whether actual or perceived. These include the effect of the response both on a cognitive and behavioural level. In terms of the study this included the witnessing and experiencing of workplace aggression, anxiety, depression, and worry. However the levels of each were found to be low or normal as could be expected when a participant dealt effectively with their perceived stress. The fifth and last stage of the model revolves around feedback and is found to occur at all of the other stages influencing the outcome at each of the other stages. This could result in an individual strengthening and consolidating their social problem solving ability in general. Homeostasis may be achieved in the face of a stressful working environment. Furthermore it may be one factor that helps to maintain and even enhance psychological wellbeing.