Analysis Report

This report is structured as follows.

Contents

This report is divided in three parts. The first presents the measures of reliability for the comfort and encouragement scales, which were measured with more than one question using Likert-type scales. The second section shows the results of a cross-tabulation analysis, which aimed to find significant associations between the categorical variables of interest. The report ends with a correlation analysis, which aimed to find association between comfort, encouragement and the rest of the variables under study.

Reliability Tests

The first step was to execute reliability analysis. Reliability is an assessment of the degree of consistency between multiple measurements of a variable. One form of reliability is test–retest, by which consistency is measured between the responses for an individual at two points in time. The objective is to ensure that responses are not too varied across time periods so that a measurement taken at any point in time is reliable. A second and more commonly used measure of reliability is internal consistency, which applies to the consistency among the variables in a summated scale. The rationale for internal consistency is that the individual items or indicators of the scale should all be measuring the same construct and thus be highly intercorrelated (Hair et al., 2014). The analysis in this study was done using Cronbach's Alpha. The table below shows the descriptive statistics and Alpha coefficients for comfort and encouragement, which were the questions measured using Likert-type scales (5-points).

Item Statistics

Variable	Mean	Std. Deviation	N	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	λ
Q9 Comfort	3.38	1.524	844	0.677	-0.148	
Q10 Comfort	4.48	0.808	844	0.023	0.815	0.572
Q11 Comfort	2.29	1.400	844	0.547	0.171	
Q4 Encouragement	2.36	1.332	844	0.808	-	0.888
Q5 Encouragement	2.00	1.146	844	0.808	-	

While Encouragement reached an acceptable level of reliability ($\lambda = 0.888$), the scale for comfort did not ($\lambda = 0.572$). An examination of the item-total correlations reveals that 'Q10' is the problematic item, with a very low correlation to the total scale. If this item was deleted, Alpha would increase to 0.815. Thus, the rest of the analysis was performed

with the separate items. Encouragement items were averaged to form a single score to represent the concept.

Cross-Tabulations

The results of this analysis is presented on the 'CrossTabulations' spreadsheet on the Excel file attached. The table below shows the frequencies of each question per levels of advocation, training, education and practice pattern (Kenalog current use, past use and frequency of use). This table is supported by a statistical test for proportion differences (chi-square test). This test is used when you wish to explore the relationship between two categorical variables. Each of these variables can have two or more categories. This test compares the observed frequencies or proportions of cases that occur in each of the categories, with the values that would be expected if there was no association between the two variables being measured (Pallant, 2010). The table below shows an example of a cross-tabulation table.

		Q1 Advocation				Q2 Training	
		No, none of the faculty	Yes, about half of the faculty	Yes, most of the faculty	Yes, only a few of the faculty	No	Yes
Q2 Training	No	$83.99\%_a$	$9.41\%_b$	$4.93\%_b$	$31.62\%_c$	-	-
	Yes	$16.01\%_a$	$90.59\%_b$	$95.07\%_b$	$68.38\%_c$	-	-
Q3 Educated	No	$74.38\%_a$	$4.71\%_b$	$3.45\%_b$	$26.20\%_c$	$79.71\%_a$	$3.99\%_b$
	Yes	$25.62\%_a$	$95.29\%_b$	$96.55\%_b$	$73.80\%_c$	$20.29\%_a$	$96.01\%_b$
Q6 Residency_Program	Academic (University-affiliated)	$92.17\%_a$	$89.41\%_{a.b}$	$84.24\%_b$	$93.77\%_a$	$94.12\%_a$	$88.25\%_b$
	Combined	$2.14\%_a$	$4.71\%_a$	$3.94\%_a$	$3.66\%_a$	$2.65\%_a$	$3.78\%_a$
	Military	$2.14\%_a$	$1.18\%_a$	$2.46\%_a$	$1.10\%_a$	$0.88\%_a$	$2.39\%_a$
	Private Institution	$3.56\%_a$	$4.71\%_{a.b}$	$9.36\%_b$	$1.47\%_a$	$2.35\%_a$	$5.58\%_b$

Statistical differences are represented as subscript letters. If any pair of groups show different letters, that means that the different proportions observed are statistically

different. These tests are sensitive to sample size, so a lack of statistical significance does not necessarily mean that differences do not exist, but that there is no sufficient statistical power in the test.

According to the table above, the proportion of those who received training is significantly different between those who were not advocated (16.01%) and those who were advocated only a few of the faculty (68.38%). It is also significantly different from those who were advocated most of the faculty and about half of the faculty. The difference between those advocated half of the faculty (90.59%) is not significantly different from those advocated most of the faculty (95.07%), since the subscript letter is the same (b).

The results of a chi-square analysis indicate if both concepts are statistically related (e.g. Training and Advocation). The table below shows a sample of the chi-square coefficients. The full results are presented on the 'ChiSquare_Results' tab on the Excel file attached.

Pearson Chi-Square Tests

		Q1 Advocation	Q2 Training	Q3 Educated	Q14 Practice Patterns Kenalog Use	Q15 Practice Patterns Past Use	Q16 Practice Patterns Frequency of Use
Q2 Training	Chi-square	370.323		513.107	67.345	67.991	81.996
	Sig.	**0.000**	.	**0.000**	**0.000**	**0.000**	**0.000**
Q3 Educated	Chi-square	325.369	513.107		54.603	47.539	56.148
	Sig.	**0.000**	**0.000**	.	**0.000**	**0.000**	**0.000**

The 'Sig.' lines indicate p-values for statistical significance. When the values are lower than 0.05, it means that the concepts are significantly related at the 95% confidence level. In other words, it means that the differences on the proportions presented earlier are significant.

Correlations

Correlation coefficients are indicators of associations between variables (Pallant, 2010). Values between 0.10 and 0.29 indicate a small degree of association, while values between 0.30 and 0.49 are considered medium and values higher than 0.50 represent a high degree of association (Cohen, 1988). There are several different statistics available,

depending on the level of measurement and the nature of your data. Pearson' coefficient 'r' is designed for interval level (continuous) variables, whereas Spearman's 'rho' is designed for use with ordinal level or ranked data and is particularly useful when the data does not meet the criteria for Pearson correlation (Pallant, 2010). As some of the variables under study are measured in an ordinal or categorical level, Spearman's test was used. When variables were categorical (eg. Gender), they were transformed into dummy variables (coded as 0 and 1) before being inserted into the procedure.

The table with correlation coefficients and associated p-values is displayed on the 'Correlations_ColorCode' spreadsheet. There are several significant correlations between comfort or encouragement and the rest of the variables, which may guide the further development of predictive models for these concepts.

References

Cohen, J., 1988. Statistical power analysis for the behavioral sciences, 2nd ed. Erlbaum, Hillsdale, NJ.

Hair, J.F., Black, W., Babin, B., Anderson, R., 2014. Multivariate data analysis, Seventh. ed. Pearson Education, Inc., Edinburgh.

Pallant, J., 2010. SPSS Survival Manual, 4th ed. McGraw-Hill, Berkshire, England.