

Ollscoil na hÉireann, Gaillimh

NATIONAL UNIVERSITY OF IRELAND, GALWAY

Third Arts, First Semester Examination, 1999 - 2000

Psychology, Paper 4

PS234 Experimental Psychology, Research Methods, and Psychological Statistics I  
(Unit value 2.0)

Professor Noel Sheehy

Professor Jack James

Dr. Jane Walsh

Mr. Michael Hogan

Time allowed: 2 hours

Answer two questions from Section A and one question from Section B

(Candidates will be provided with the necessary statistical tables and formulae.)

Section A – Statistics (answer two questions from this section)

1. The number of hours of exercise taken weekly (X) and level of stress (Y) reported by 10 adults is presented in the table below:

Hours of exercise weekly (X)	Stress (Y)
5	4
8	3
12	4
16	2
3	8
0	10
4	5
7	4
10	3
6	6

Calculate the regression equation and plot the regression line of the relationship between Exercise and Stress.

(100%)

pto.

2. Twenty-four hospital patients attending the Accident and Emergency Unit of a hospital were categorised according to gender and level of neurosis. Number of visits to the A&E department were then recorded over a two-year period. The data are reported below:

Number of visits to A&E Dept over a two-year period.		
	High neurosis	Low neurosis
<b>Males</b>	7	1
	8	0
	7	2
	9	2
	6	2
	5	3
<b>Females</b>	10	7
	20	2
	17	8
	16	9
	12	8
	18	9

Carry out a parametric ANOVA and interpret the results (100%)

3. Data on gender and extroversion from a random sample of 12 adults is represented in the table below:

Gender	Extroversion
F	18
F	20
F	19
F	21
F	16
F	19
M	11
M	12
M	14
M	10
M	16
M	11

- (a) Determine if there is a significant relationship between gender and extroversion using the point-biserial correlation coefficient. (90%)
- (b) What other statistical test could you use to answer the same question? (10%)

4. The results of a two-way ANOVA on the effects of sleep deprivation & alcohol on number of errors made on a computer task are reported below:

*Table 1 – Results of two-way independent ANOVA on the effects of sleep deprivation and alcohol on number of mistakes on a computer task.*

Source of variance	Sums of squares SS	DF	Mean Squares (MS)	F Ratios	P	Eta
Sleep deprivation	130.045	2	X	X	X	X
Alcohol	355.405	1	X	X	X	X
Interaction	60.774	2	X	X	X	X
Within (error)	134.668	X	11.222	X	X	
Total	X	17				

*Table 2 – means of the 4 conditions in the independent 2-way ANOVA.*

	Sleep deprivation		
	4 hours	12 hours	24 hours
Alcohol	$\bar{X} = 15.000$	$\bar{X} = 19.667$	$\bar{X} = 26.000$
No alcohol	$\bar{X} = 10.667$	$\bar{X} = 10.667$	$\bar{X} = 12.667$

- (i) Compute the missing values (i.e. where there is an X) in Table 1 and interpret the results. (70%)
- (ii) Draw a graph of the interaction of alcohol and sleep deprivation on number of mistakes. (30%)

**SECTION B – Research Methods** (Answer one question from this section)

- ‘In order to understand human behaviour and solve human problems, people need to be studied individually’. Critically evaluate this statement in light of case-study methodology applied to psychology.
- ‘Given that the way we speak (our ‘discourses’) about our world constructs our reality, a central aim of psychology should be to study talk and texts.’ Describe, using research examples, how discourse analysis may be applied to the study of talk and texts in psychology.
- ‘The validity of the survey methodology is dependent on the process of questionnaire construction and the reliability and validity of the questionnaires used.’ Discuss this statement in light of the recent methodological debate and research on the survey method.