

**CHILDHOOD EPILEPSY
SYNDROME, DEMOGRAPHIC
VARIABLES AND EPILEPSY-
SPECIFIC HRQOL:**

A TWO-STAGE GRAPHICAL ANALYSIS

Presented by

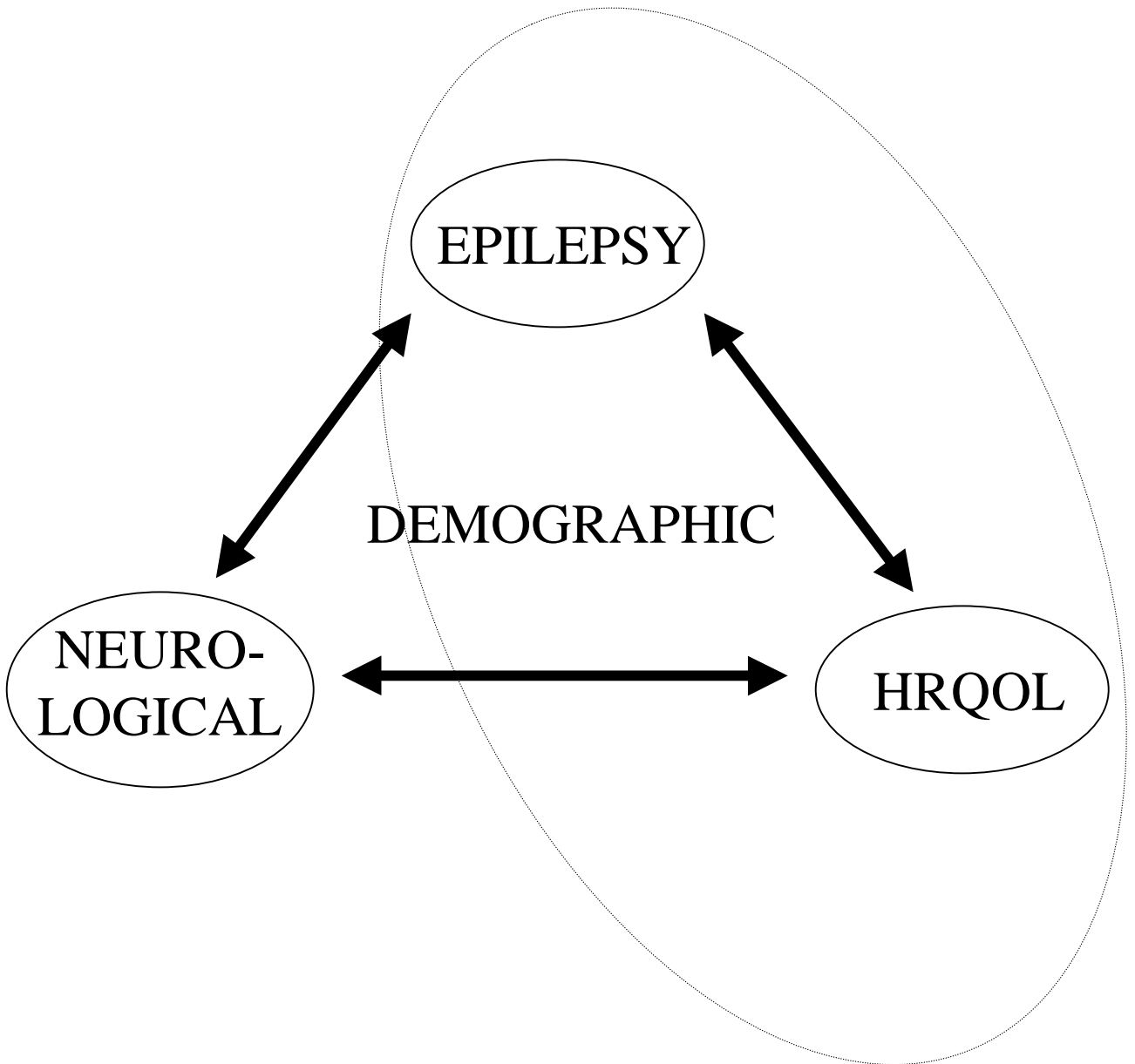
David Cairns

Macquarie University

**Australian Quality of Life Studies (OzQol)
Conference 1999**

The Australian Centre on Quality of Life

Deakin University (Toorak campus) November 26



This
Presentation

Gender
Age onset
Age
Medications
IQ
Seizures
Lesions

EPILEPSY

DEMOGRAPHIC

HRQOL

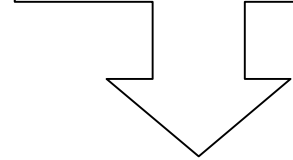
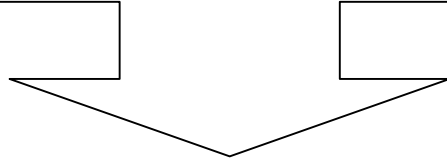
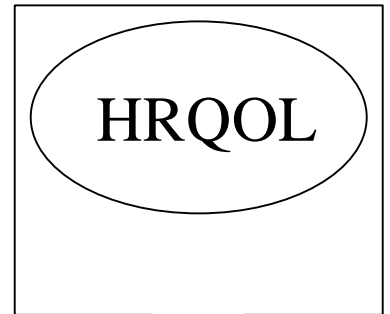
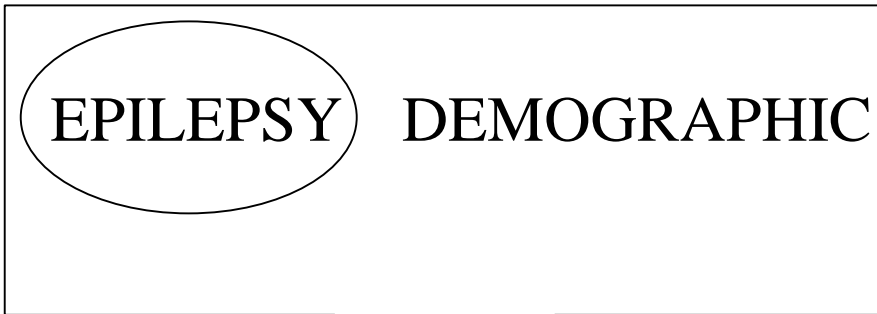
Type of epilepsy syndrome:
Frontal lobe,
Temporal lobe
and Generalized.

Specific to childhood epilepsy – 16 scales covering 5 domains: physical function, emotional well-being, cognitive function, social function and behaviour.

OVERVIEW OF TWO-STAGE GRAPHICAL ANALYSIS

Internal variables

External Variables



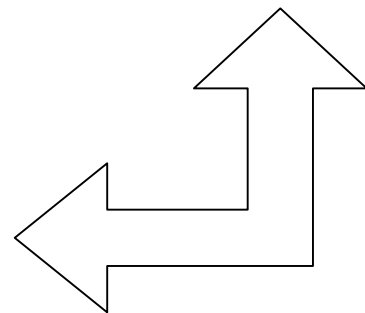
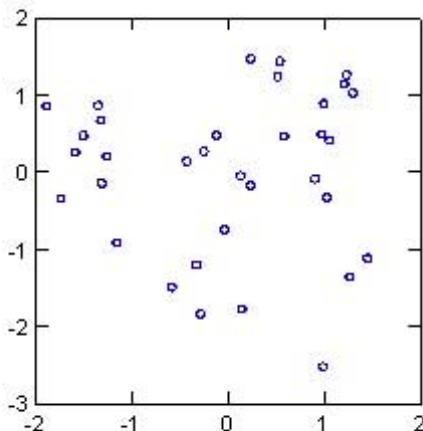
STAGE I

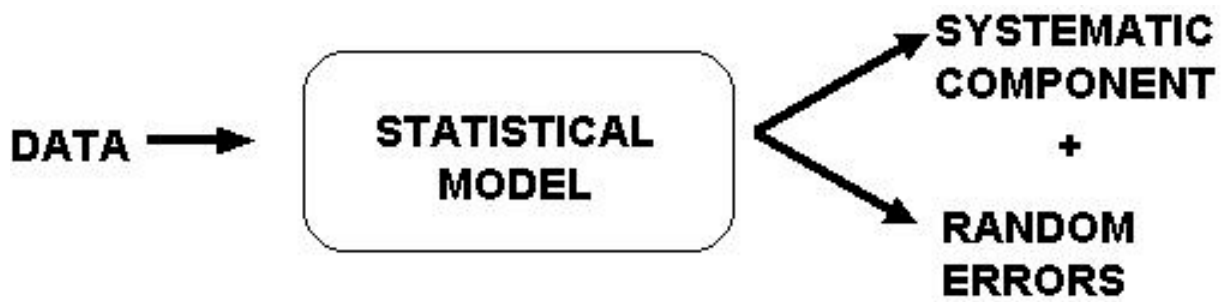
STAGE II

Create & Interpret

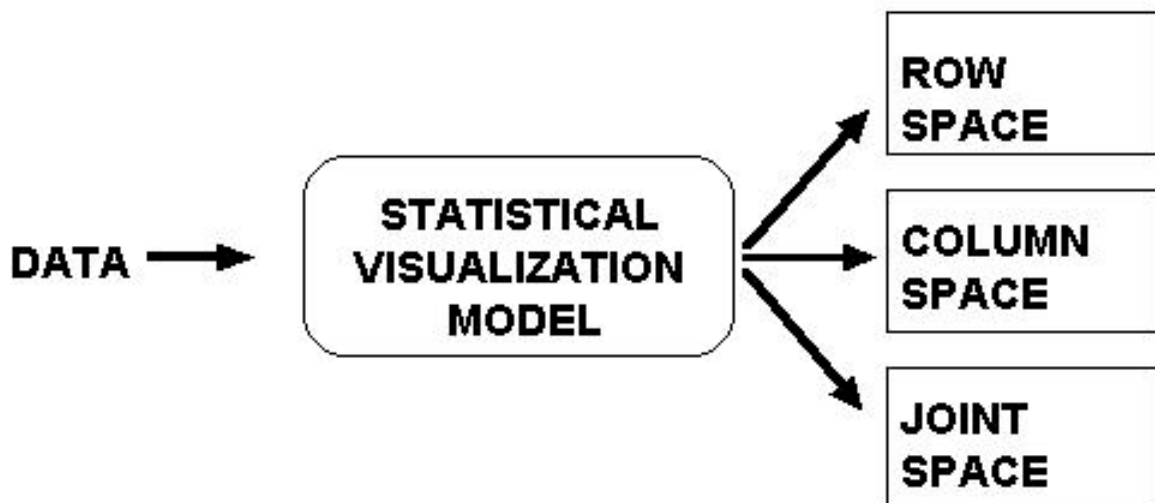
**Map onto Space
& Interpret**

Object Diagram



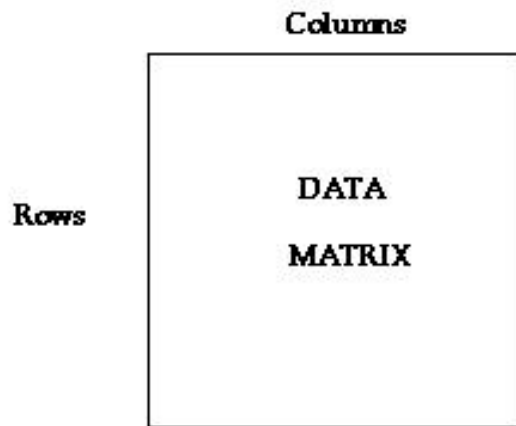


Model extracts everything systematic in the data, leaving purely random errors



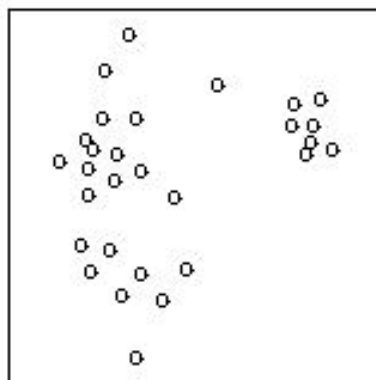
Uses geometrically based statistical model to provide visual insight into the structure of data. Objects represented as points, vectors or partitions in Euclidean space.

DATA ANALYTIC GRAPHICAL METHOD



SPATIAL DISPLAY OF
INFORMATION CONTAINED
IN THE DATA MATRIX

- Principal components analysis
- Multidimensional scaling
- Correspondence analysis
- Guttman scalogram analysis
- Optimal scaling techniques

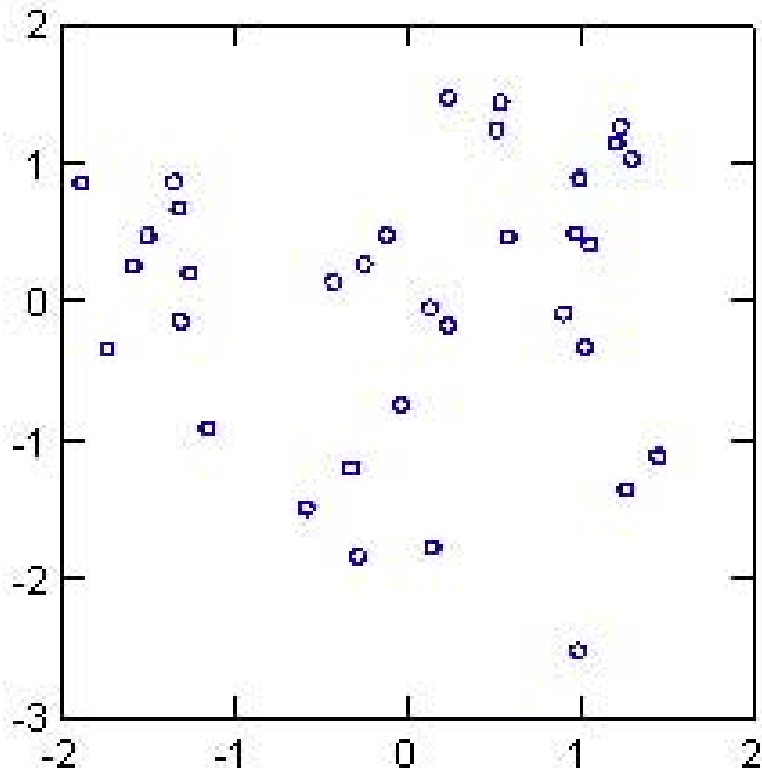


Row space

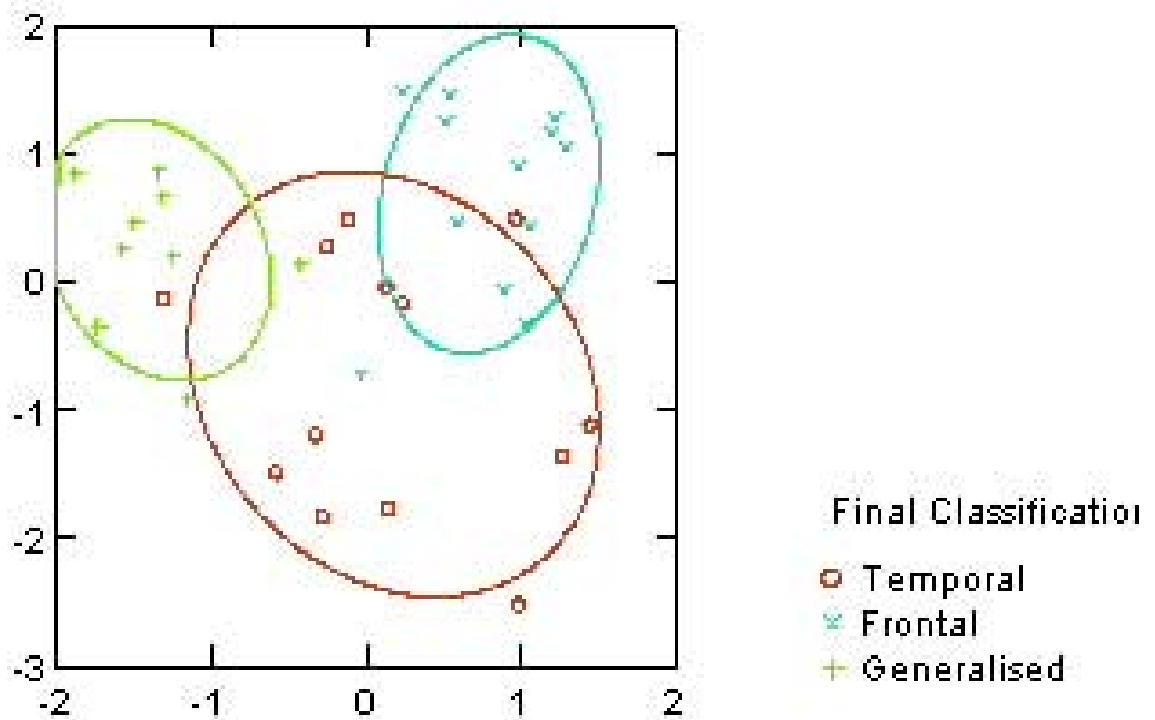
Column space

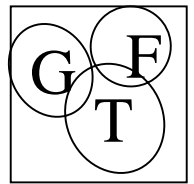
Joint space

Object Diagram

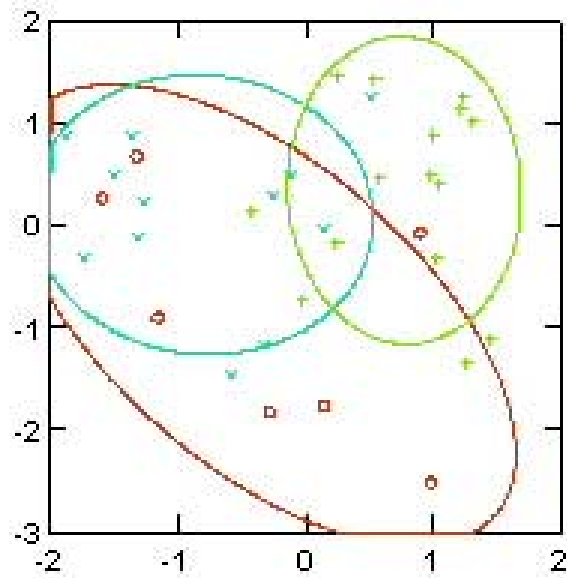


Object Diagram (Final Classification)

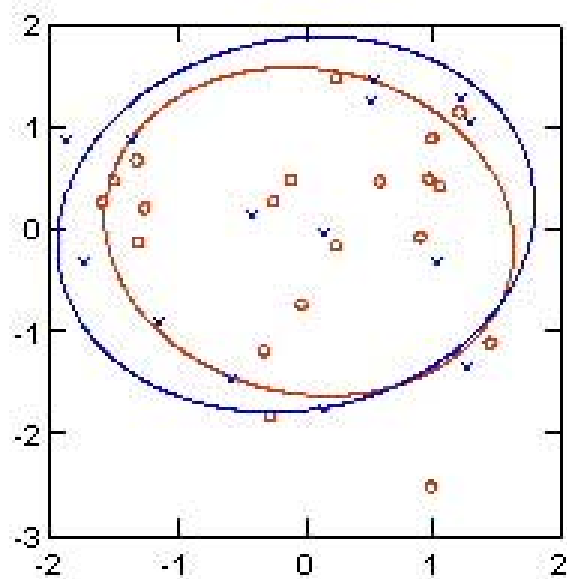


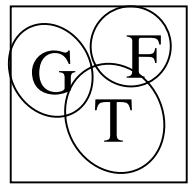


Object Diagram (Age of Onset)

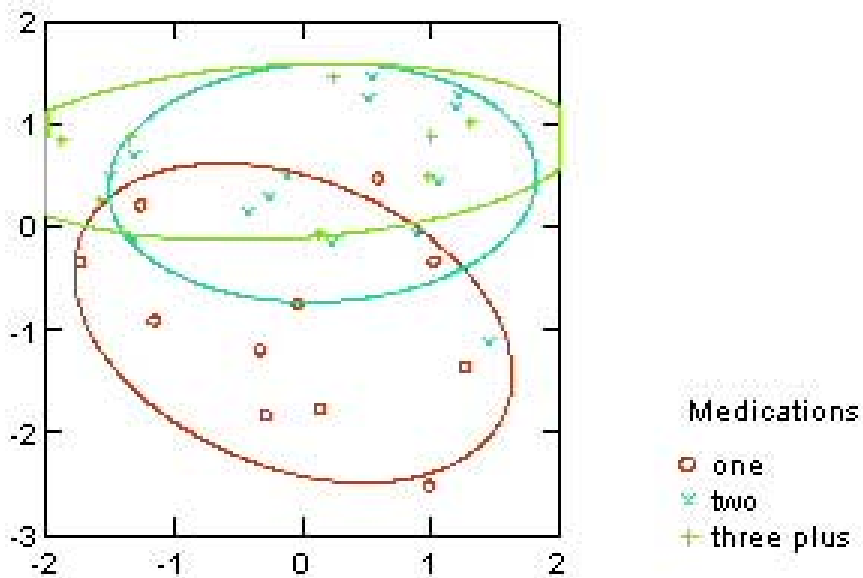


Object Diagram (Sex)

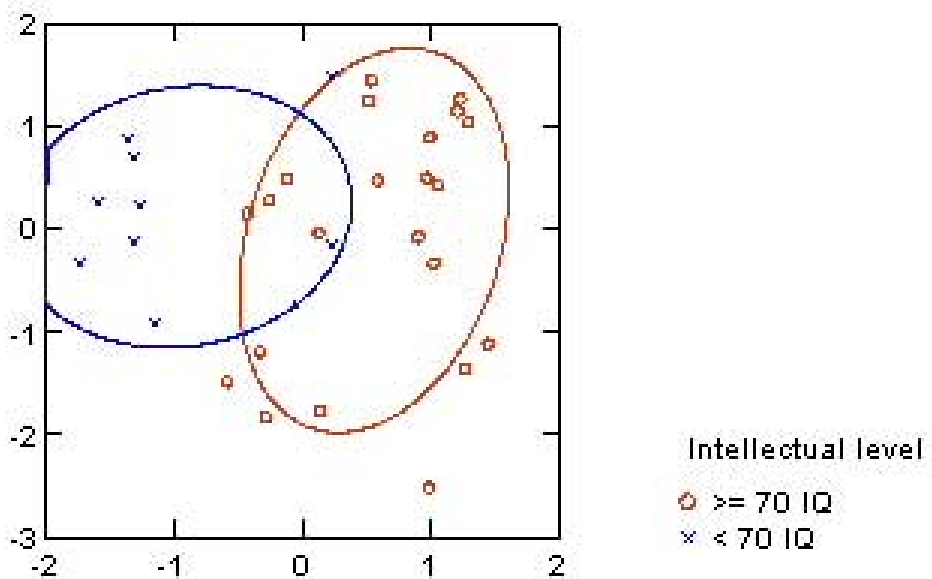


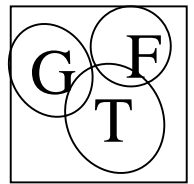


Object Diagram (Number of Medications)

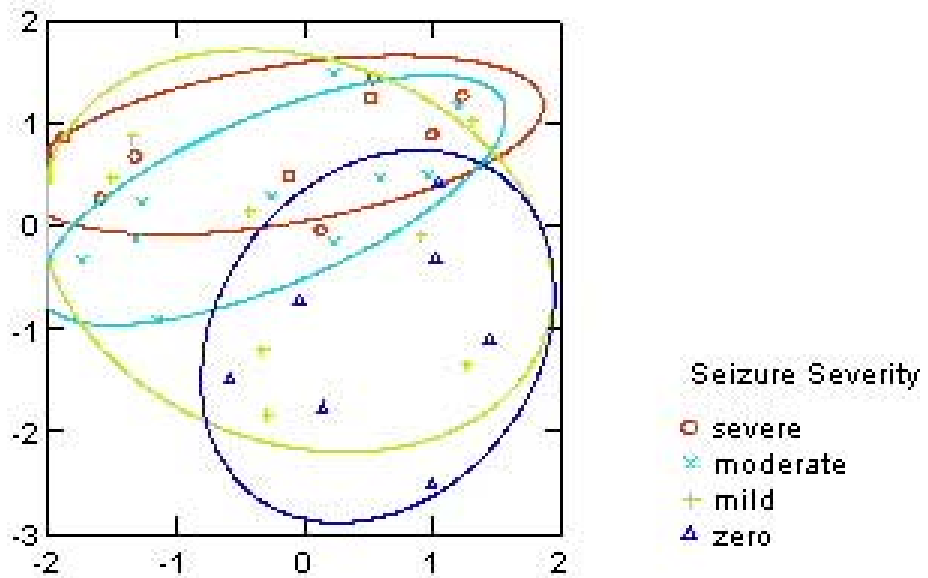


Object Diagram (Intellectual Level)

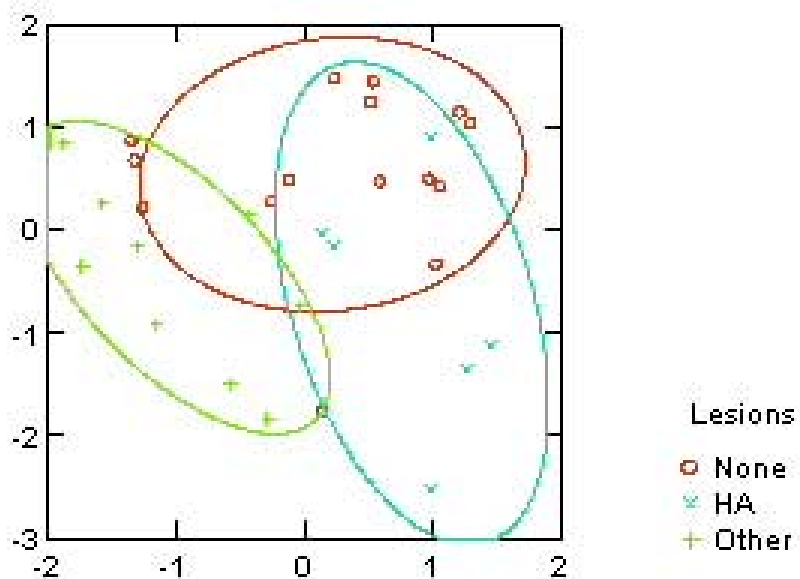




Object Diagram (Seizure Severity)



Object Diagram (Lesions)



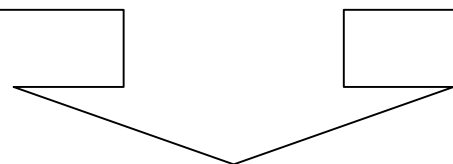
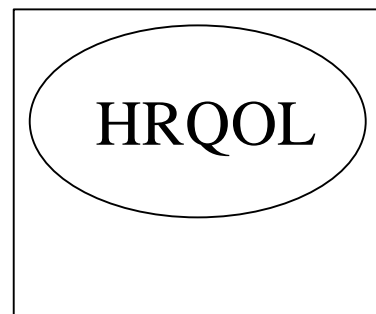
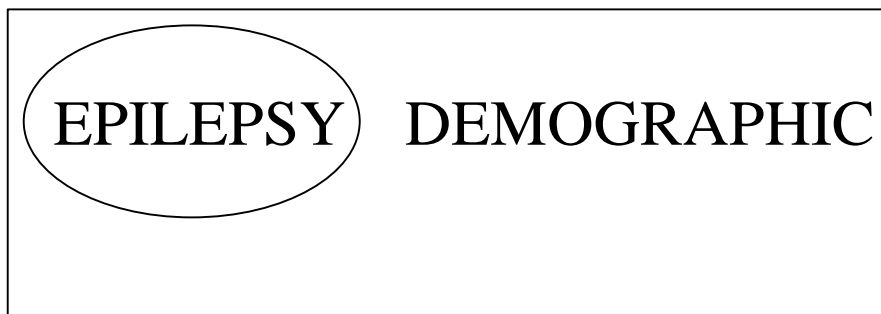
Relationship between final classification and demographic and clinical variables

	Generalised (n = 9)	Temporal (n = 13)	Frontal (n = 12)
Gender	male and female	male and female	male and female
Age of Onset	between birth and starting school	at birth & between birth and starting school	after starting school
Present Age	all ages (tend to be younger)	all ages (tend to be middle range)	all ages (tend to be middle range)
Number of Medications	2 (some 3+)	1	3+ (some 2)
Intellectual Level	low (< 70 IQ)	high (> = 70 IQ)	high (> = 70 IQ)
Seizure Severity	moderate and severe	mild and zero	moderate and severe
Lesions	other and none	other and HA	none and HA

OVERVIEW OF TWO-STAGE GRAPHICAL ANALYSIS

Internal variables

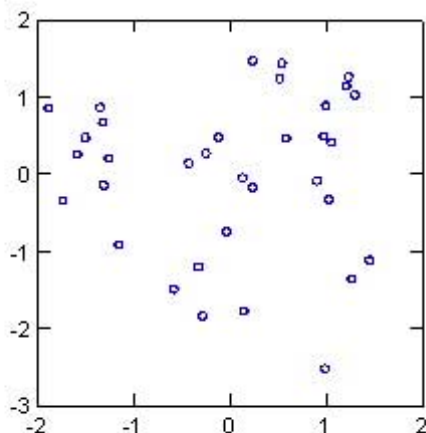
External Variables



STAGE I

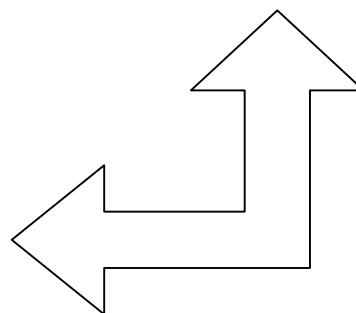
Create & Interpret

Object Diagram

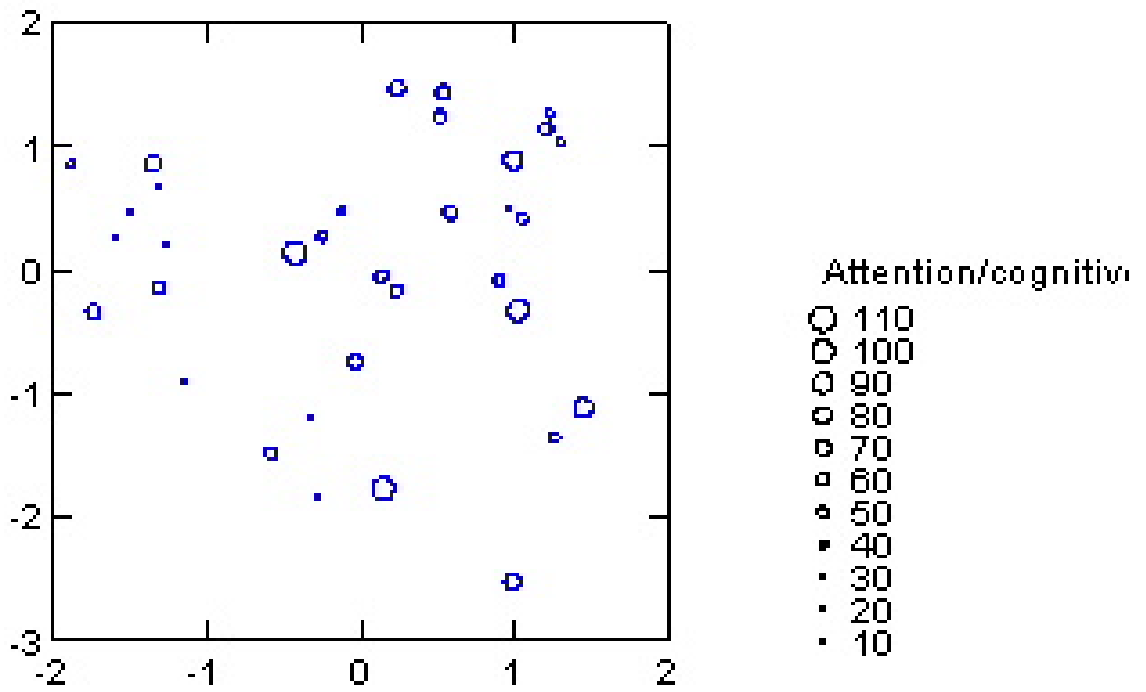


STAGE II

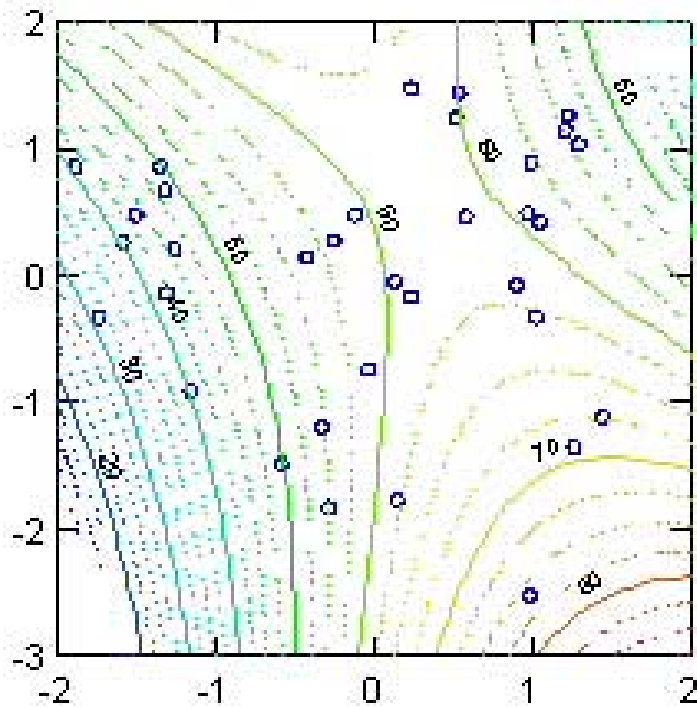
**Map onto Space
& Interpret**

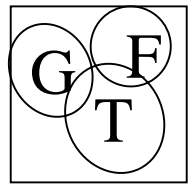


Attention/cognitive subscale (bubble plot)

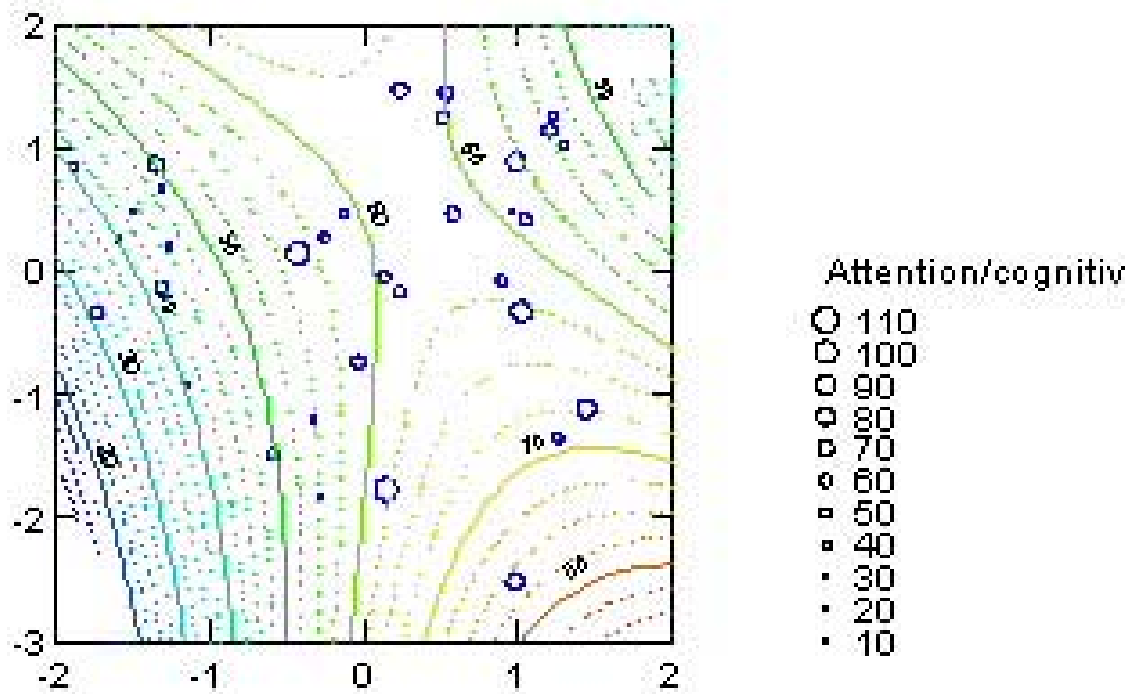


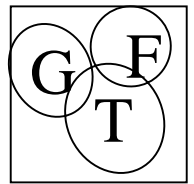
Attention/cognitive subscale (contour plot)



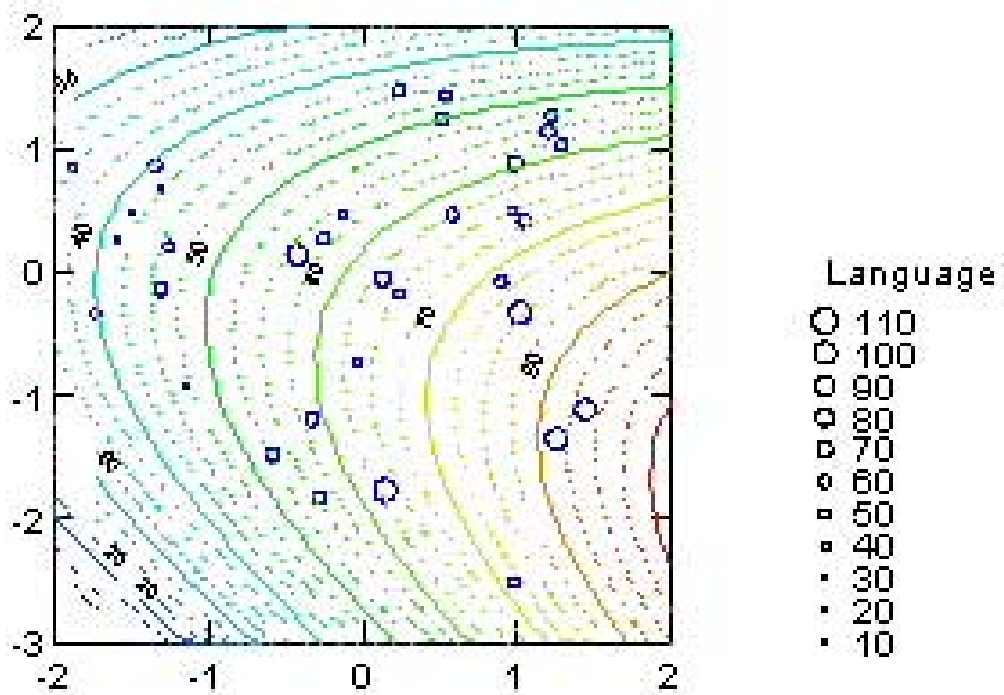


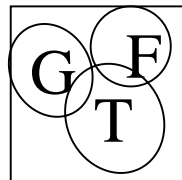
Attention/cognitive subscale (bubble and contour plot)



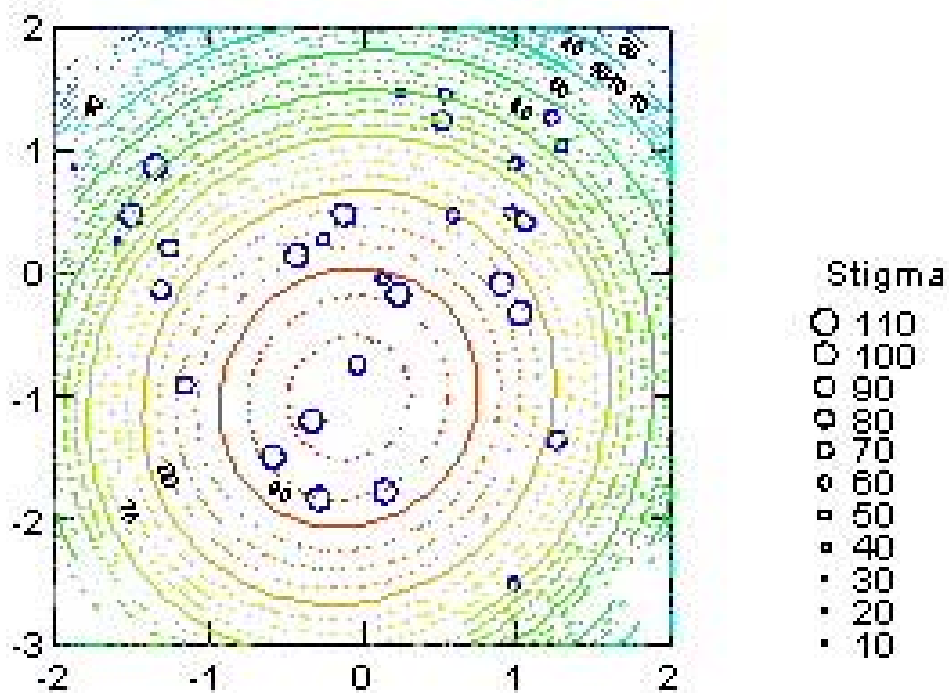


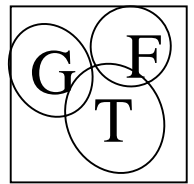
Language subscale (bubble and contour plot)



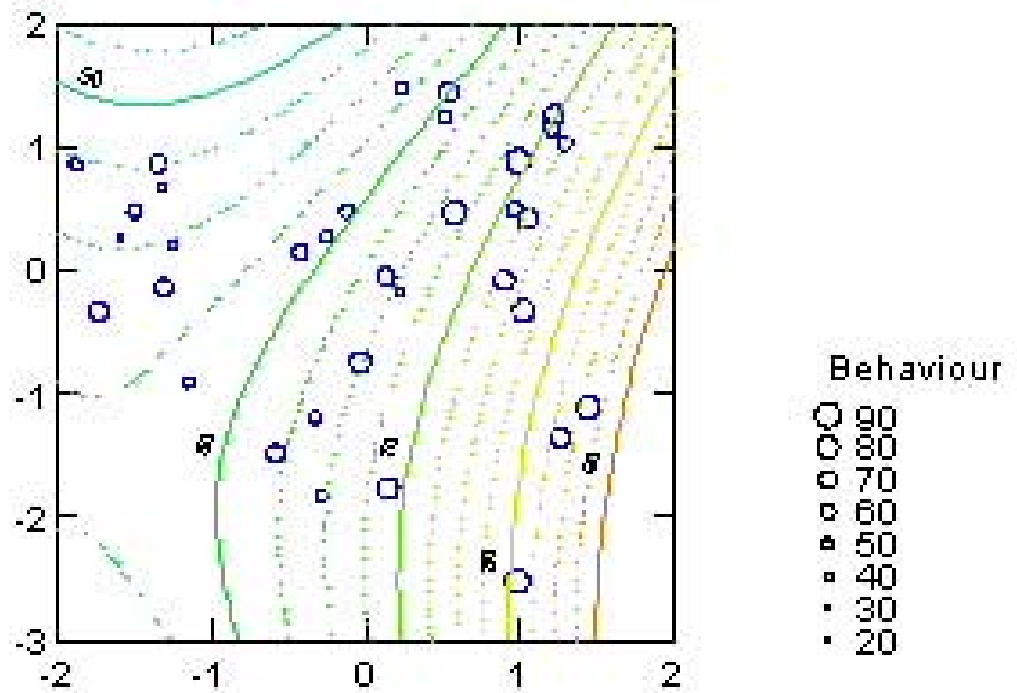


Stigma subscale (bubble and contour plot)





Behaviour subscale (bubble and contour plot)



Relationship between final classification and QOL subscales

	Generalised (n = 9)	Temporal (n = 13)	Frontal (n = 12)
Attention/concentration	low	low-medium	medium
Memory	medium	low-medium	medium
Language	low	medium	medium
Other cognitive	low	low-medium	medium
Social interaction	low-medium	medium-high	medium-high
Social activities	medium	high	medium-high
Stigma	high	high	high
Depression	medium-high	high	high
Anxiety	medium	high	medium-high
Control/helplessness	medium	medium-high	high
Self-esteem	medium	medium-high	medium-high
Physical restrictions	medium	medium	medium-high
Energy/fatigue	low	medium	low-medium
Behaviour	low-medium	medium-high	high
QOL last 4 weeks	low-medium	medium-high	medium
General Health last 4 weeks	medium	medium-high	medium
Overall QOL	medium	medium	medium-high

Why graphical analysis?

- Interim analysis
- Not a random sample (case study – no inference)
- No prior hypotheses to test
- Multiplicity of p-values problem
- Interested in exploring and communicating patterns in multivariate data
- My personal preference

“there is no single statistical tool that is as powerful as a well-chosen graph ... even for small sets of data, there are many patterns and relationships that are considerably easier to discern in graphical displays than by any other data analytic method”

Chambers, J.M., Cleveland, W.S., Kleiner, B. and Tukey, P.A. 1983. Graphical methods for data analysis. Wadsworth & Brooks (page 1).