

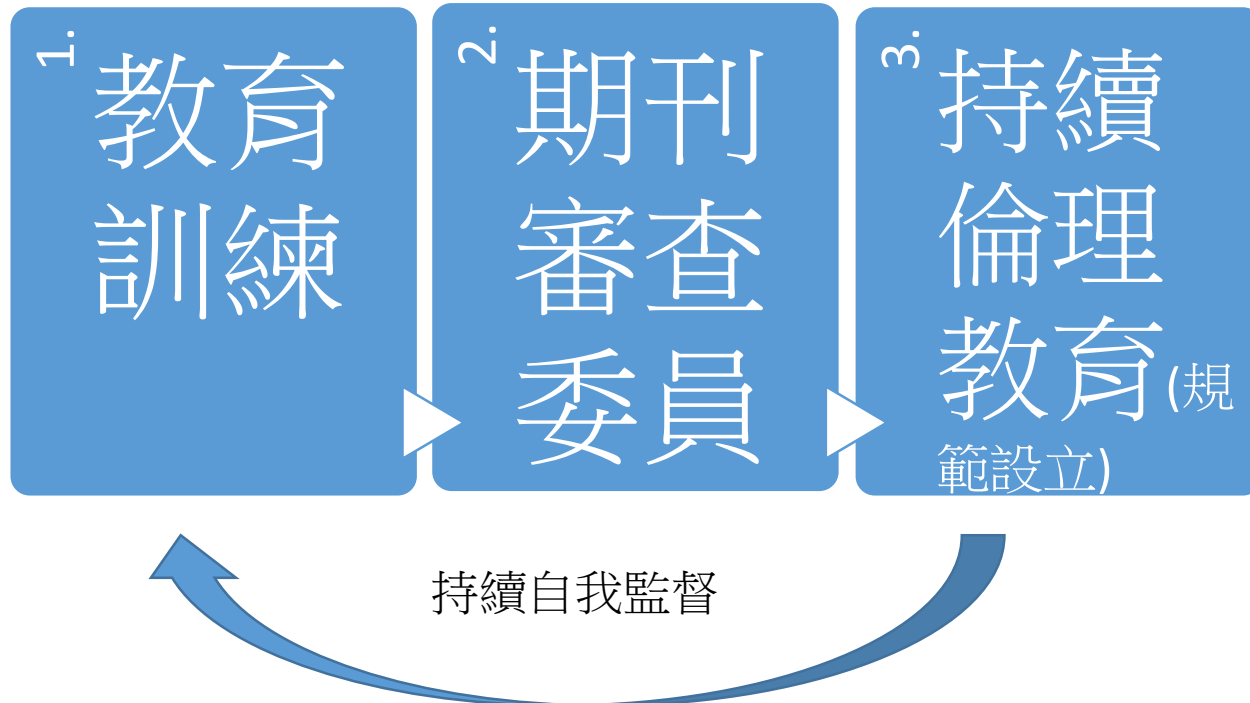
# 統計分析的倫理議題

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# 資料分析被視為高風險工作

- 對知識產生的影響很大，但缺乏訓練，也動機不足。
- 統計分析是技術性問題或是隱微的研究倫理問題? (Questionable Research Practice)



- **APA:** Ethical principles of psychologists and code of conduct (2017)  
著重在研究參與者
- 6.01 maintenance of records
- 8.10 report research results
- 8.14 sharing research data for verification
- **ASA:** Ethical guidelines for statistical practice (2018)  
B. Integrity of data and methods

# Sterba (2006)

- **Overt** misconduct (公開):
- 1. Median splitting → create significant results

	數學成就高分組	數學成就低分組
數學興趣高分組		
數學興趣低分組		

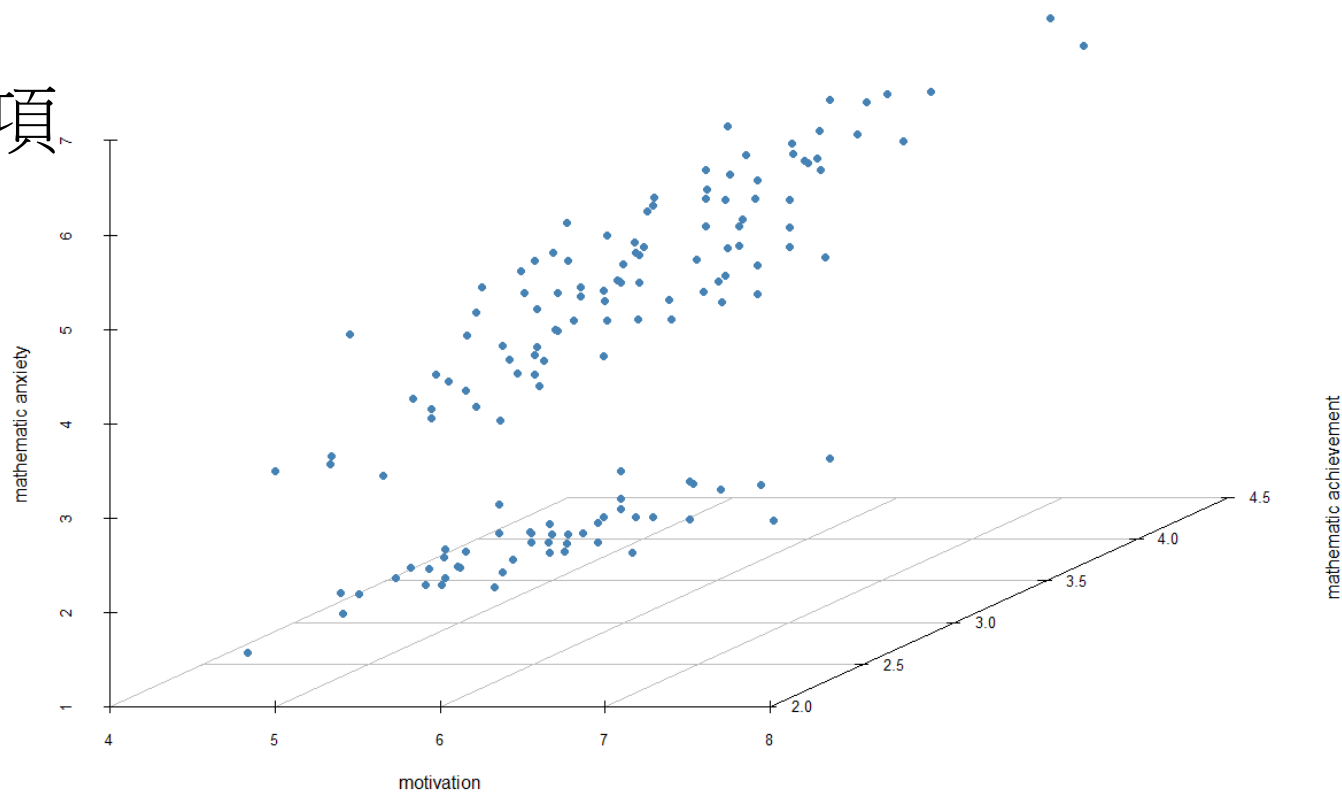
- 2. 結構方程模式: cross-validate EFA on the same data set

### 3. 多變量分析:

建立線性關係的依變項

$$Y_4 = Y_1 + Y_2 + Y_3$$

先做完單變量分析再  
做一個多變量分析



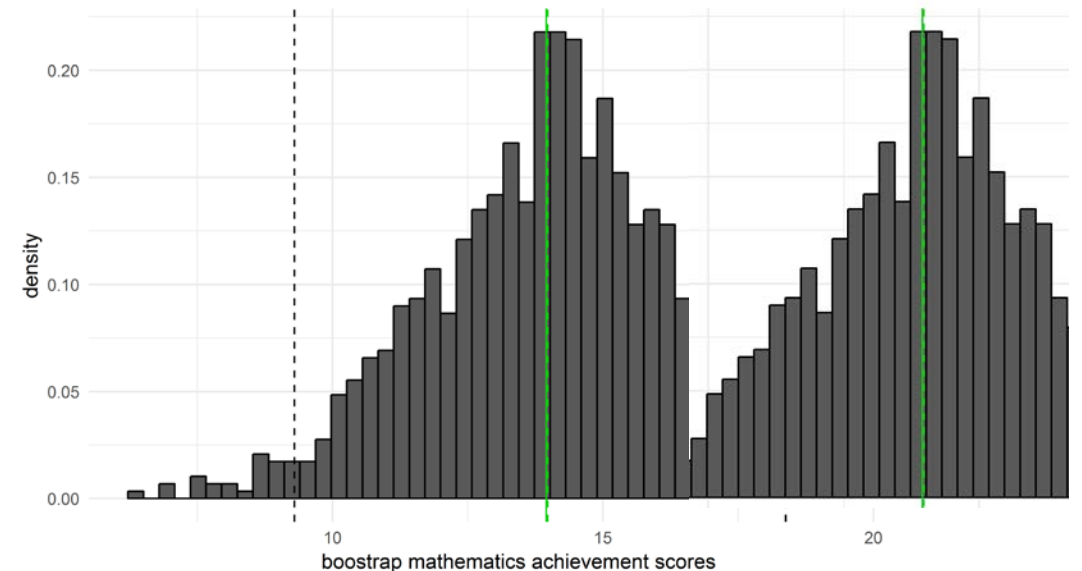
- **Covert** misconduct:

1. Assumption violation 該怎麼辦? 資料如何準備應說明清楚。  
Normality, independence, homogeneity of variance


Trimming: 要配上 Winsorized variance

Impute data: 不要用平均數差補

Add samples

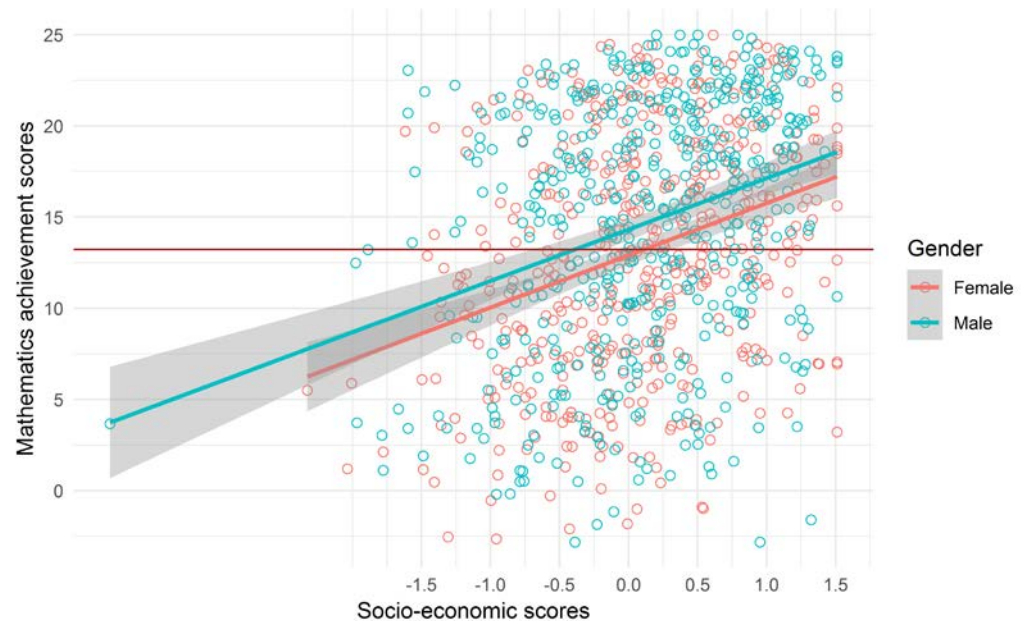


- 樣本數規劃與效果量(effect size)
- Type I error沒有控制: 使用Bonferroni 來調整  $\alpha$  值  
如事後成對比較(pairwise comparison)
- 隨機樣本設計或共變數分析的假定
- 做一大堆的檢定 → 請先列出研究假設，做最少的分析



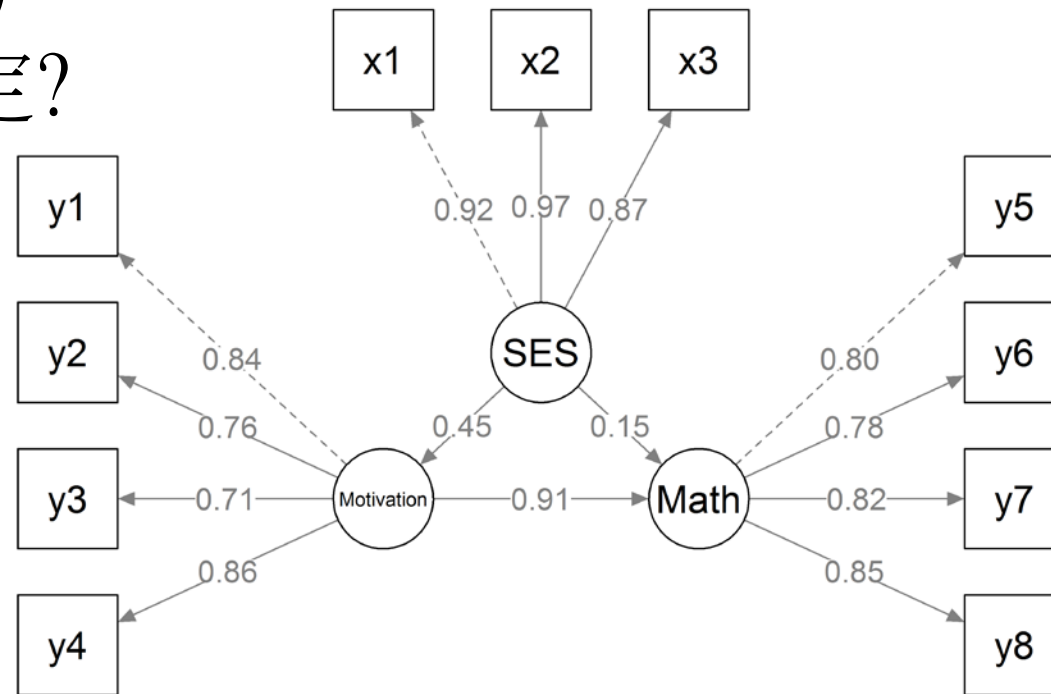
Researcher  
degrees of  
freedom

- 2. Capitalization on chance
- 迴歸建模 Design-based or model-based?:  
自變項之選擇, Stepwise?
- 迴歸模式診斷
- outlier之處理





- 3.結構方程模式(SEM)poor fit就調整 correlated error (根據modification index) (將falsify 做成 verify)
- 各變項分配符合假定?
- 評量之信效度?
- 因果關係(中介) 或調節(交互)?



- 4. Selecting report: file drawer problem:

The effect that many studies in an area of research may be conducted but never reported due to insignificant statistical findings, and those that are not reported may on average report different results from those that are reported. (cherry-picking) (fishing)

- confirmation bias
- HARKing (Hypothesizing After the Results are Known):  
post hoc hypothesis

# 一些提醒

- Publish-or-perish research climate: 請助理找看看有什麼顯著的
- 解方:
  1. Best practice: 學習新的/更適切的方法
  2. 從拒絕虛無假設到提供信賴區間CI:

如果個人唯一的目的是拒絕虛無假設，則只要有夠大的樣本終究可以達到該目的。拒絕虛無假設本身並沒有意義，NHST一直都有很多爭論。一個好的研究設計，應該是先考量到會有多大的效果量，再求出需要多少樣本。

有些期刊已採取預約接受刊登之制度(pre-acceptance)，研究計畫裡的所有檢定結果不論顯著與否都要被刊登，不能更改原先之設計或分析。目前另有期刊Journal of Articles in Support of the Null Hypothesis專門刊登不顯著的研究結果，這樣也有利於整合研究(meta analysis)的進行。

3. Replication
4. 上傳資料檔或相關係數矩陣以供檢視
5. Truth seeking mindset

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