# 國立彰化師範大學 98 學年度<u>博</u>士班招生考試試題

系所： <u>特殊教育學系</u>　　　　　　　　　　科目： <u>研究方法與統計</u>

*I.* 每個答案 5 分，共 50 分

一、解釋名詞

1). Mauchly's test of sphericity

2). Homoscedasticity

3). Simple interaction effect

4). Fixed-effect model

5). Multicollinearity

二、某研究有四個實驗處理水準，若進行事前正交比較，且每一個比較的 α 為.05，請問該實驗犯第一類型錯誤之概率是多少？　＿＿＿＿＿＿＿＿＿

三、以下是 AB 兩因子各組的平均數資料，若交互作用達統計顯著水準時，請問調整後的 a1b1 值是多少？　＿＿＿＿＿＿

| A 因子 | B 因子 | 平均數 |
|--------|--------|--------|
| a1 | b1 | 10 |
|    | b2 | 15 |
|    | b3 | 20 |
| a2 | b1 | 8 |
|    | b2 | 5 |
|    | b3 | 2 |

四、以下是某研究者以共變數分析探討三種不同的教學法對於 18 位學習障礙學生數學科學習成效之資料。

| 組別 | 數學平均得分 | 智力平均得分 |
|------|--------------|--------------|
| A 教學法 | 2.53 | 1.80 |
| B 教學法 | 3.76 | 4.50 |
| C 教學法 | 2.62 | 2.71 |

其共變數分析摘要表如下:

| 變異來源 | SS | df | MS | F |
|----------|------|------|-------|------|
| 組間 | 6.63 | 2 | 3.315 | ? |
| 組內 | 8.21 | ? |  |  |

（1）請問 F 值約是多少？＿＿＿＿＿＿＿

（2）若組內迴歸係數值為 0.385，請問 A 組學生的調整後平均數是多少？＿＿＿＿＿＿＿

五、設創造力與批判思考能力的相關為 0.79, 創造力與智力的相關為 0.60, 批判思考能力與智力的相關為 0.865，請問智力變項的解釋力排除之後，創造力與批判思考能力的相關值約是多少？　_____

*II.* 請依所附資料回答以下問題：（25％）

1. 何謂「multiple baseline design across participants」？
2. 何謂「Momentary time sampling」？
3. 教育研究法中，「內在效度」的意涵為何？
   下列資料中之研究設計如何控制影響內在效度的因素？
4. 教育研究法中，「外在效度」的意涵為何？
   下列資料中之研究設計如何因應外在效度的問題？
5. 依研究結果的資料(Figure 1.)，分析此項研究結果。
   註：Figure 1. 的標題為：Percentage of Intervals with on-task behaviors across
   　　　　　　　　　　　　participants and phases
   　　縱座標為：Percentage of Intervals On-task

摘要：　A multiple baseline design across participants was used to determine how teacher greetings affected on-task behavior of 3 middle school students with problem behaviors. Momentary time sampling was used to measure on-task behavior during the first 10 min of class. Teacher greetings produced increases in students' on-task behavior from a mean of 45% in baseline to a mean of 72% during the intervention phase. Teacher greetings represent an antecedent manipulation that can easily be implemented in classrooms to improve students' on-task behavior.

資料來源： Allday, R. A., & Pakurar, K. (2007). Effects of teacher greetings on
　　student on-task behavior. *Journal of Applied Behavior Analysis, 40*(2), 317-320.

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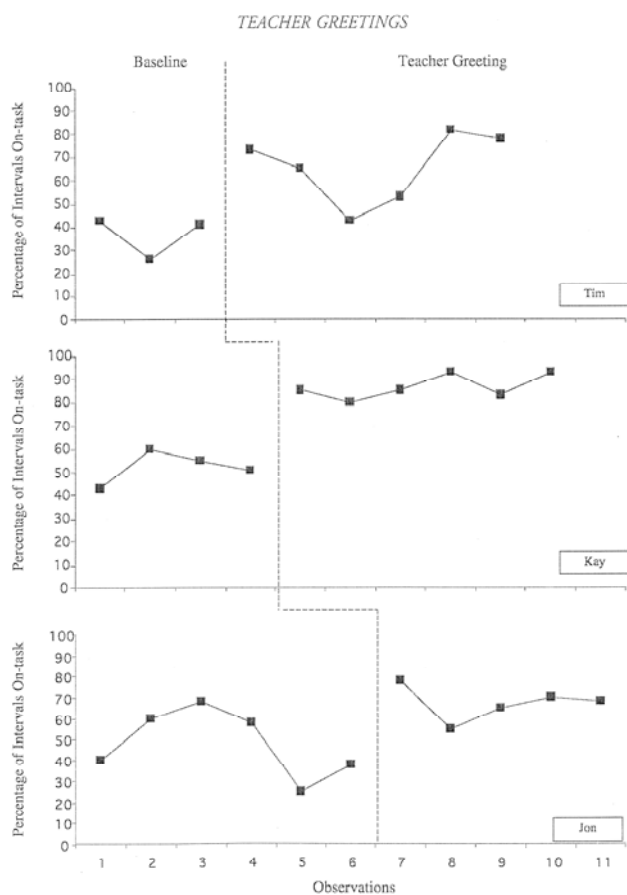
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Figure 1. Percentage of intervals with on-task behaviors across participants and phases.

**III.** 請依所附資料回答以下問題：（25％）

1. 何謂「quasi-experimental research study」？
2. 教育研究法中，自變項 (independent variables) 與 依變項 (dependent variables)的意涵為何？下列資料中，其自變項 與 依變項 為何？
3. 資料中之研究假設與研究結果為何？
4. 資料中之研究結果為何？
5. 如果您是此研究的作者，在下結論時應留意甚麼事項？

<u>摘要</u>：　Researchers have hypothesized four levels of instructional dialogue (TABLE 1) and claimed that teachers can improve children's language development by incorporating these dialogue levels in their classrooms. It has also been hypothesized that enhancing children's early language development enhances children's later reading development. This quasi-experimental research study investigated both of these hypotheses using a collaborative service delivery model for Grade 1 children with

language difficulties from a socially and economically disadvantaged urban community in Australia. Comparing the end-of-year reading achievement scores for the 57 children who received the language intervention with those of the 59 children in the comparison group, the findings from this research (TABLE 2) are supportive of both hypotheses. The interrelationships between learning difficulties, reading difficulties, and language difficulties are discussed along with children's development in vocabulary, use of memory strategies and verbal reasoning, and the need for multidimensional programming.

**TABLE 1**
Four Levels of Language Complexity and Proficiency Related to Teacher Discourse and Questioning as Proposed by Blank et al. (2003)

| Level | Language complexity | Example of teacher discourse/questioning |
|---|---|---|
| 1 | Directly supplied information | What do you see? |
| 2 | Classification | What color is that? |
| 3 | Reorganization | Retell me the story. |
| 4 | Abstraction and inference | What made it happen? |

Note. Levels progress from basic (1) to advanced (4).

**TABLE 2**
Changes in Grade 1 Intervention Group Children's Language Complexity and Proficiency as Measured by the PLAI Before and After Intervention

| Language proficiency level | At-risk judgment | Intervention Pre (%) | Post (%) |
|---|---|---|---|
| Capable at all 4 levels | Very satisfactory language level, considered not at risk for school difficulties | 9 | 40 |
| Capable at 3 of 4 levels | Satisfactory language level, considered unlikely to be at risk for school difficulties | 32 | 35 |
| Capable at 2 of 4 levels | Unsatisfactory language level, considered at risk for school difficulties | 34 | 19 |
| Capable at only 1 of 4 levels | Very unsatisfactory language level, considered significantly at risk for school difficulties | 25 | 5 |

Note. N = 57. PLAI = Preschool Language Assessment Instrument (Blank et al., 2003).

資料來源： Hay, I., Elias, G., Fielding-Barnsley, R., Homel, R., & Freiberg, K. (2007). Language delays, reading delays, and learning difficulties: Interactive elements requiring multidimensional programming. *Journal of Learning Disabilities, 40*(5), 400-409.