LO TBAT analyse the Learning Practical

Observation: age factors in mobile phone usage

Hypotheses

- Experimental: *there will be a significant difference in the number of people aged 60+ observed using a mobile phone in a public place than people aged 18-35*
- **Null: there will no significant difference participants aged 60+ and 18-35 in observed, public, mobile phone use**
- IV: age
- **DV: whether participant is observed using mobile phone in public or not**

Other participant data recorded

- Gender, whether in group > 3, time of day
- **Qualitative notes: what was happening – talking on phone, texting and talking to children/others, listening to music etc.**

Design

- Non-participant, covert, naturalistic observation
- **It will be done in a café, park or other *public* place where you can record passers by**

Recording sheet example

P	Age	Using mobile	In group > 3	Time	Qual notes
1	18-35	Y	Y	11 AM	Talking on phone animatedly. With children in pushchair and another adult (female). Focused on phone conversation, occasionally waving at children to be quiet.
2	60 +	N	N	3 PM	Male, walking with female of similar age. Speaking to one another. No visible mobile.

Getting the quantitative data ready

P	Age	Using mobile	In group > 3	Time	Qual notes
1	18-35	Y	Y	11 AM	Talking on phone animatedly. With children in pushchair and another adult (female). Focused on phone conversation, occasionally waving at children to be quiet.
2	60 +	N	N	3 PM	Male, walking with female of similar age. Speaking to one another. No visible mobile.
	18-35: 11 60+: 10	Y: 12 N: 9	Y: 4 N: 17		

The Chi-Square Contingency Table

Age	Using mobile phone	Not using mobile phone	Total
18-35	5	12	17
60+	10	4	14
Totals	15	16	31

Calculate the expected values (row total x column total) / grand total

Age	Using mobile phone	Not using mobile phone	Total
18-35	(17 x 15) / 31 = 8.23	(17 x 16) / 31 = 8.77	17
60+	(14 x 15) / 31 = 7.23	(14 x 16) / 31 = 6.77	14
Totals	15	16	31

Complete the chi-square grid

Category	Observed value (O)	Expected value (E)	O-E	$(O-E)^2$	$\frac{(O-E)^2}{E}$
18-35/using mobile	5	8.23	-3.23	10.43	1.27
60+/no mobile	10	6.77	3.27	10.69	
18-35/no mobile	12	8.77	3.23	10.43	
60+/using mobile	4	7.23	-3.23	10.43	

Add up the last column to get Chi-Square!

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

χ^2 = the test statistic $\sum$ = the sum of

O = Observed frequencies E = Expected frequencies

Work out significance

- Work out degrees of freedom (r-1)(c-1)
- Using a 2 tailed test look up the critical value for your d.f.
- If your value is >= the critical value you can reject the null and accept the experimental hypothesis

$$\frac{(O-E)^2}{E}$$

Chi-Square Critical Values Table

Chi squared distribution formula

$$X^2 = \sum \frac{(O-E)^2}{E}$$

$$df = (r-1)(c-1)$$

Critical values for chi-squared distribution

	Level of significance for a one-tailed test					
	0.10	**0.05**	**0.025**	**0.01**	**0.005**	**0.0005**
	Level of significance for a two-tailed test					
df	**0.20**	**0.10**	**0.05**	**0.025**	**0.01**	**0.001**
1	1.64	2.71	3.84	5.02	6.64	10.83
2	3.22	4.61	5.99	7.38	9.21	13.82
3	4.64	6.25	7.82	9.35	11.35	16.27
4	5.99	7.78	9.49	11.14	13.28	18.47
5	7.29	9.24	11.07	12.83	15.09	20.52

Significance Testing

- Because our observed Chi-Square of 5 is greater than the critical value of 3.84 (df = 1, 2 tailed, p < 0.05) we can reject the null and accept the experimental hypothesis, **or**
- **Because our observed Chi-Square of 1 is less than the critical value 3.84 (df=1, 2 tailed, p < 0.05) we have to accept the null hypothesis**

Summarise significance testing

- We found a significant difference between the older (…) and younger (…) groups in whether they used mobile phones in public or not **or**
- **We found no significant difference between ….**

Thematic Analysis Step 1

Participant	Notes	Ideas (themes in brackets)
1	Male pushing a child in a pushchair at school leaving time. Smoking as well as on the phone. Talking rather animatedly and seemingly argumentative. Walking rather fast. (18–35 years old, not in a group)	Men and children (company) Smoking (other activity) Animated talk (type of talk) Argumentative (type of talk) Fast walking (type of walk)
2	Similar to Participant 1, a male with a child in a pushchair and again just after 3.00 p.m. on a Tuesday afternoon. Smiling and more calm, and seemingly listening as had the phone to his ear but was not talking. (18–35 years old, not in a group)	Men and children (company) Smiling (emotion) Calm talking (type of talk) Listening, not talking (focus of attention)
3	Older woman pushing a pushchair talking quickly on the phone. Not talking to the child in the pushchair or to another child walking with her. They are walking quite slowly. (50+, not in a group)	Woman and children (company) Slow walking (type of walk) Quick talking (type of talk)

Thematic Analysis Step 2

- **Go through your qualitative data – look for themes – use the participant data to help you**
- You want about 3-4 themes from this data
- **Summarise your 3-4 themes**
  - **What the theme is about**
  - **What overall you saw and from whom**

Thematic Analysis Step 2

Theme	Comment
Company	Whether alone or with company may affect whether on the phone or not
Type of talk	The type of talk (sharp, average, fast, slow, argumentative, animated…) may link with age, gender or another factor
Type of walk	The type of walk (purposeful, slow, fast…) may link to type of talk or other factor
Focus of attention	Where attention is focused might be of interest if it links with company
Dress	There was information about business dress and casual dress – this may show the constructs of the observer or the culture, which could be of interest and might go with type of talk
Reason for call	Reason for call may link to dress
Emotion	Emotion (laughing, smiling, not smiling) may link with type of talk
Body language	Gesturing and formal demeanour might be of interest culturally or by gender
Other activity	There was just one person smoking in the street, which might show cultural attitudes; with just one person, could not link with age or gender, but could be possible links
Physical position	Lagging behind or away from the group might show some link to company (both notes went with someone in company)

Thematic Analysis Step 3

Overarching theme	Themes made up of:
Physical features	Body language, physical position
Emotional features	Type of talk, type of walk, emotion
Cultural features	Dress, other activity, reason for call
Social features	Company, focus of attention

Overarching theme	Tallying
Physical features	𝍸 (5)
Emotional features	𝍸 𝍸 𝍸 𝍸 𝍸 (25)
Cultural features	𝍸 III (8)
Social features	𝍸 𝍸 𝍸 I (16)

Evaluation 1

- Consider and write notes (directly linked to this study) on:
  - Validity (ecological, internal, themes lose validity as they are reduced)
  - Reliability (would you get the same results again? What might be the issues?)
  - Generalisability (would these results hold for a different time of day, different place etc.)
- Put together:
  - 2-3 overall strengths of your study
  - 2-3 overall weaknesses of your study

Evaluation 2

- Put together:
  - 2-3 overall strengths of your study
  - 2-3 overall weaknesses of your study

Strengths

- There is quantitative data and qualitative data. The statistical testing is useful in showing no difference using the quantitative data, and the qualitative data add depth and detail that help with the conclusions and interpretation of the data gathered.

Weaknesses

- Just one observer meant that their constructs and features they chose to observe gave an element of subjectivity to the qualitative data and themes arising
- The limitations of the observation in terms of one day, one time, one place mean that reliability is low. This is a specific observation of one moment in time which has validity, but this reduces the reliability of the data.

Improvements (critical!)

- Two improvements to this study

- Using a narrower street and perhaps fewer people so that those not using a mobile phone could be tallied. Then conclusions might be drawn about percentages of those using a phone according to age group and gender, which would be of interest.
- Having more than one observer so that reliability could be checked.
- Repeating the study on a different day, at a different time, in a different town and so on, to test for reliability of the findings.
- Repeating the study using a different sample to improve generalisability as the sample in the current study would be biased.

- Repeating the study using different observers to show if the themes that were generated from the qualitative data were reliable, had cultural bias or showed bias from individual perceptions.
- Interviewing the participants to ask them about the phone call that was observed – this would be interesting, but not easy to do in practical terms.