มหาวิทยาลัยราชภัฏนครปฐม
Nakhon Pathom Rajabhat University

CHAPTER 4

Research Methodology
ระเบียบวิธีวิจัย

Episode 4.5 Correlation

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Correlation

Chapter 4 EP 4.5

Parametric Tests

Correlation

- Correlation is a statistical term describing the degree to which two variables move in coordination with one another.

The Pearson correlation coefficient **(r)** is the most common way of measuring a linear correlation.

Pearson correlation coefficient (r)

The assumptions of the Pearson correlation coefficient

These are the assumptions of the Pearson correlation coefficient

#1: Both variables are on an interval or ratio scale

#2: Data from both variables follow normal distributions, with no outliers

#3: The data is from a random or representative sample

#4: They expect a linear relationship between the two variables

(Best, 1977)

Formula

$$r = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}}$$

r = correlation coefficient
x_i = values of the x-variable in a sample
$\bar{x}$ = mean of the values of the x-variable
y_i = values of the y-variable in a sample
$\bar{y}$ = mean of the values of the y-variable

Pearson correlation coefficient

- The strength of the linear relationship between two variables has a value between -1 to 1, with a value of

-1 means a total negative linear correlation,

0 is no correlation, and

+ 1 means a total positive correlation.

(Best, 1977)

Correlation coefficients meaning

Pearson correlation coefficient (r)

- r = O - 1, positive correlation,

: When one variable changes, the other variable changes in the same direction.

- r = 0,

: There is no relationship between the variables.

- r = O – (-1), negative correlation,

: When one variable changes, the other variable changes in the opposite direction.

(Best, 1977, p240)

Correlation coefficients meaning

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- Correlation coefficients whose magnitude is between 0.81 and 1.00 indicate variables that can be considered highly correlated. /*r* = 0.81 - 1.00 /
- Correlation coefficients whose magnitude is between 0.51 and 0.80 indicate variables that can be considered moderately correlated. /*r* = 0.51 - 0.80 /
- Correlation coefficients whose magnitude is between 0.21 and 0.50 indicate variables that can be considered low correlated. /*r* = 0.21 - 0.50/
- Correlation coefficients whose magnitude is between 0.00 and 0.20 indicate variables that have a very low correlation. /*r* = 0.00 - 0.20/

(Best, 1977, p240)

Correlation coefficients meaning

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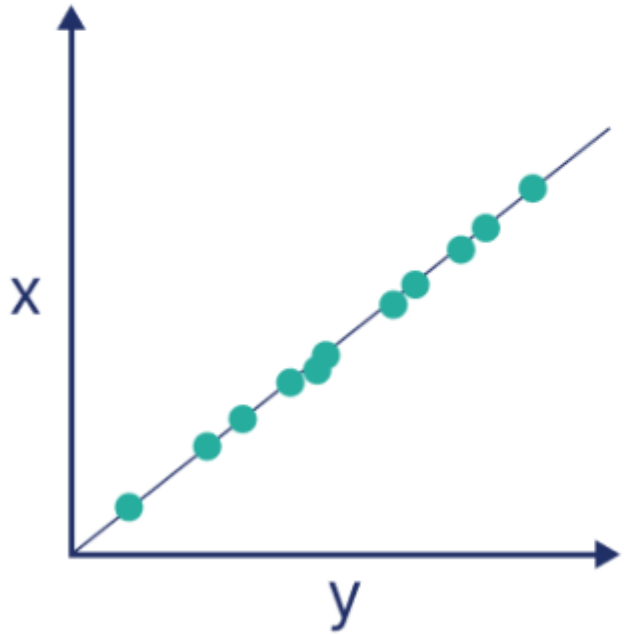
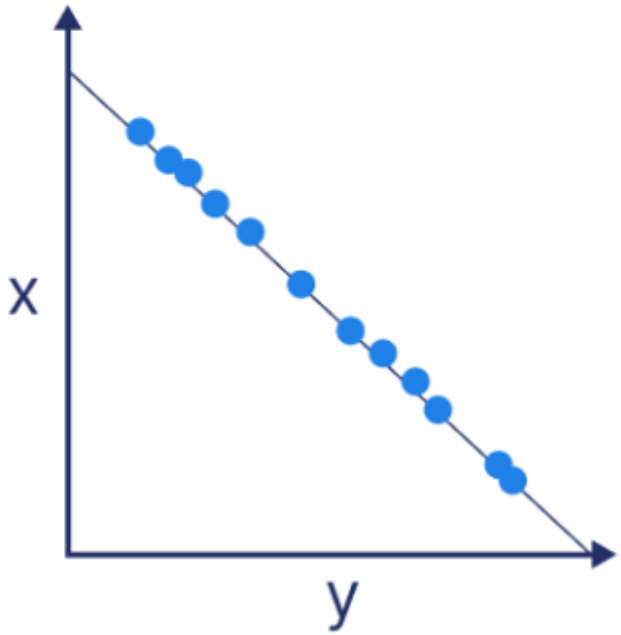
Perfect positive correlation

$r = 1$



Perfect negative correlation

$r = -1$



Print out from SPSS

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Hypothesis

Ho: There is no correlation (there is not a linear relation) between X (age) and Y (knowledge).

H_1: There is a significant correlation (there is a linear relation) between x and y.

The test is a statistical test for the correlation coefficient.

Correlations

		x 2. อายุ (ปี)	y sumKN
2. อายุ (ปี)	Pearson Correlation	1	-.183*
	Sig. (2-tailed)		.012
	N	187	187
sumKN	Pearson Correlation	-.183*	1
	Sig. (2-tailed)	.012	
	N	187	187

*. Correlation is significant at the 0.05 level (2-tailed).

Interpretation

There is a low level of negative correlation (r=-.183) between X (age) and Y (knowledge) at a significance of 0.05 level.

Presentation table

Table 4 Correlations between predictor variables and SPDBI

Variable	1	2	3	4	5	6	7	8	9	10
Predictor variables										
1. Age	1									
2. Dependency	.09	1								
3. Community participation,	−.04	−.07	1							
4. Living condition	.05	.27**	−.13	1						
5. Education level	−.13	.12	−.02	.09	1					
6. PSL	.13	.02	.12	.02	−.10	1				
7. Religious ritual	−.03	−.19	.35**	−.09	−.07	.15	1			
8. FSL	.08	.11	.13	.03	.08	.94**	.17	1		
9. FSPDBI	.06	−.17	−.03	−.02	.01	−.18	.04	−.22*	1	
10. FR	.14	.02	−.02	.14	−.19	−.01	−.03	−.01	.04	1
PSPDBI	.01	−.32**	.04	−.24*	−.01	−.51**	.06	−.46**	.63**	.04

Note. * $p < .05$, ** $p < .001$,
PSL = PWHRS' stroke literacy, FSL = Family members' stroke literacy,
FSPDBI = Family members' stroke pre−hospital delay behavior intention,
PSPDBI = PWHRS' stroke pre−hospital delay behavior intention,
FR = Family relationship

(Waelveerakup, Lapvongwatana, Leelacharas & Davison, 2019)

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Thank you

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