

# Music and Memory

The Island Research Project - Statistics 101B

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# Introduction

## Abstract

The goal of this research project is to find whether there is an effect of music on islander's memoriation ability. The research is conducted using the open platform **The Island**<sup>1</sup>.

## Conjecture

From many publication references<sup>2</sup>, we found that music seems to have a positive effect on human being's memory. Different types of music tend to have various effects. In addition, the effect of music on memory varies among individuals, and the time it takes for the treatment to take effect also varies from one individual to another. *Therefore, our research project focuses on analyzing the effect of music on the islanders using a Latin Square design.*

## Experiment

### Design

The design that we have chosen to use in this project is Latin Square.

Time music	9 am	11 am	1 pm	3 pm	5 pm
Age 1 (10-20)	A	B	C	D	E
Age 2 (21-30)	E	A	B	C	D
Age 3 (31-40)	D	E	A	B	C
Age 4 (41-50)	C	D	E	A	B
Age 5 (51-60)	B	C	D	E	A

Figure 1: Latin Square Design

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<sup>1</sup>The Island: <http://island.maths.uq.edu.au>

<sup>2</sup>See Reference section.

Time music	9 am	11 am	1 pm	3 pm	5 pm
Age 1 (10-20)	E	A	B	C	D
Age 2 (21-30)	D	E	A	B	C
Age 3 (31-40)	C	D	E	A	B
Age 4 (41-50)	B	C	D	E	A
Age 5 (51-60)	A	B	C	D	E

Time music	9 am	11 am	1 pm	3 pm	5 pm
Age 1 (10-20)	D	E	A	B	C
Age 2 (21-30)	C	D	E	A	B
Age 3 (31-40)	B	C	D	E	A
Age 4 (41-50)	A	B	C	D	E
Age 5 (51-60)	E	A	B	C	D

Time music	9 am	11 am	1 pm	3 pm	5 pm
Age 1 (10-20)	C	D	E	A	B
Age 2 (21-30)	B	C	D	E	A
Age 3 (31-40)	A	B	C	D	E
Age 4 (41-50)	E	A	B	C	D
Age 5 (51-60)	D	E	A	B	C

Time music	9 am	11 am	1 pm	3 pm	5 pm
Age 1 (10-20)	B	C	D	E	A
Age 2 (21-30)	A	B	C	D	E
Age 3 (31-40)	E	A	B	C	D
Age 4 (41-50)	D	E	A	B	C
Age 5 (51-60)	C	D	E	A	B

Figure 2: Latin Square Design - Replicates

- Held-constant variables:
  - gender: female
  - region: one town (Macondo)
- Nuisance factors:
  - age: 51-55 years old, 56-60 years old, 61-65 years old, 66-70 years old, and 71-75 years old,
  - time of treatment: 9 am, 11 am, 1 pm, 3 pm, and 5 pm
- Treatment:
  - type of music: no music (A), type 1 (B), type 2 (C), type 3 (D), or type 4 (E)

## Cause-and-effect diagram for music and memory

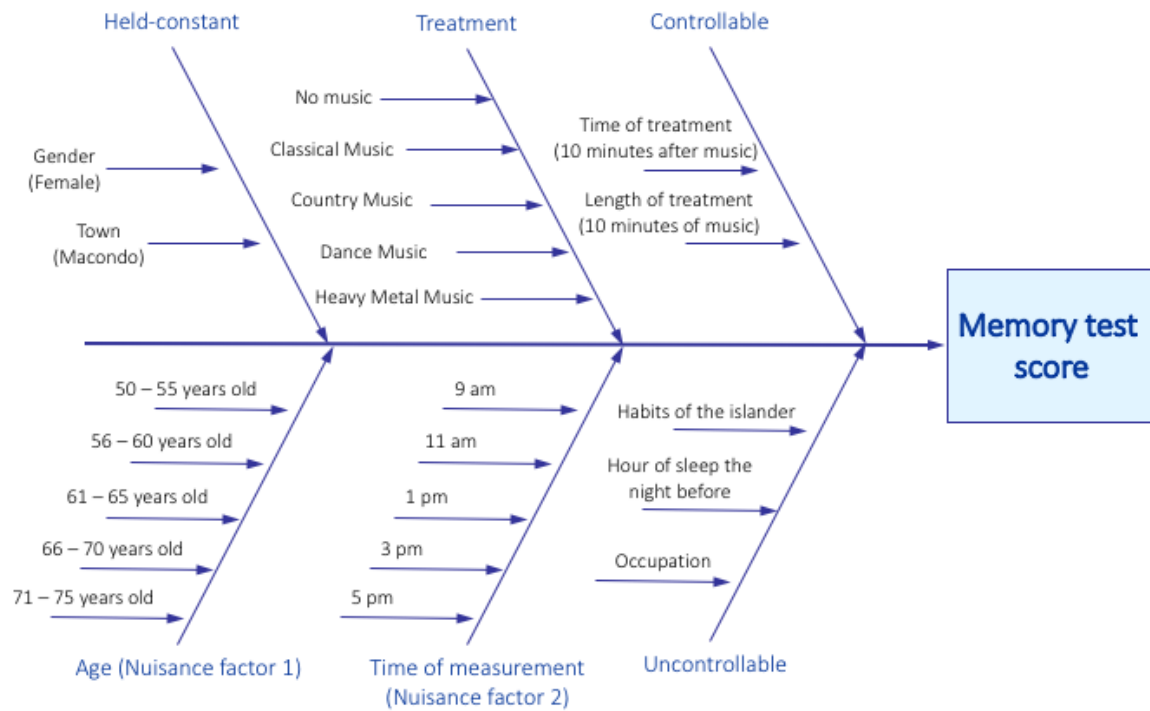


Figure 3: Cause-and-effect Diagram

## Participants

### Sample size determination

### Sample selection

## Data Analysis

### Analysis of Variance (ANOVA)

### Assumption checking

### Graphical analysis

## Conclusion

## References

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