

7/19/09

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Exercise 24 Community Violence and Achievement

Correlation Coefficient: I

Statistical Guide

A correlation coefficient indicates the strength and direction of a relationship between two variables. The most widely used correlation coefficient is the Pearson r . When it is positive in value, the relationship is direct (i.e., those with high scores on one variable tend to have high scores on the other variable *and* those with low scores on one variable tend to have low scores on the other). In a direct relationship, the closer r is to 1.00, the stronger the relationship; the closer it is to 0.00, the weaker the relationship.

When the value of the Pearson r is negative, the relationship is inverse (i.e., those with high scores on one variable tend to have low scores on the other one). In an inverse relationship, the closer r is to -1.00, the stronger the relationship; the closer it is to 0.00, the weaker the relationship.

Note that in the excerpt, SAT-9 stands for the Ninth Edition of the Stanford Achievement Test, a standardized test that is widely used nationally.

The title of the table in the excerpt refers to "bivariate correlations." The prefix "bi-" means "two." Hence, "bivariate" refers to the fact that there are two variables underlying each correlation coefficient in the table. To read the table, pay attention to the variable numbers, which are in bold.

Excerpt from the Research Article¹

Participants were recruited from an elementary school located in an urban section of Los Angeles County.... The families living...have been conceptualized as "working poor" in recent demographic studies of the Los Angeles region.... All children in 16 third-, fourth-, and fifth-grade classrooms from the participating school were invited to take part in the project. Of these children, 80% returned positive parental permission and assented to participate.

Children completed the Community Experiences Questionnaire.... Items on this measure range in severity from threats to shootings; the 4-point scale ranges from 1 (*never*) to 4 (*a lot of times*).

[An inventory] contained four items assessing bullying by peers ("kids who get hit or pushed by other kids," "kids who get bullied or picked on by other kids," "kids who have mean things said about them by other kids," and "kids who get left out of fun games or play when other kids are trying to hurt their feelings")....

Table 2
Bivariate Correlations Among All Variables

| Variable | 1 | 2 | 3 | 4 | 5 |
|--------------------------------|---|-----|------|------|------|
| Violence exposure | | | | | |
| 1. Community violence exposure | — | .20 | -.24 | -.14 | -.26 |
| 2. Bullying by peers | | | -.19 | -.07 | -.25 |
| Academic functioning | | | | | |
| 3. SAT-9 Mathematics | | | — | .60 | .64 |
| 4. SAT-9 Reading | | | | | .49 |
| 5. GPA | | | | | — |

¹ Source: Schwartz, D., & Gorman, A. H. (2003). Community violence exposure and children's academic functioning. *Journal of Educational Psychology, 95*, 163-173. Copyright © 2003 by the American Psychological Association, Inc. Reprinted with permission.

Questions for Exercise 24

Part A: Factual Questions

1. What is the value of the correlation for the relationship between variable 1 and variable 2?
(Hint: Find where the row for variable 1 meets the column for variable 2.)

.20

2. What is the value of the correlation coefficient for the relationship between "SAT-9 Mathematics" and "SAT-9 Reading"?

.60

3. How many of the 10 relationships in the table are inverse?

6

4. What is the value of the correlation coefficient for the strongest relationship in the table?

.64

5. Which one of the following pairs of variables has a stronger relationship between them?

- A. Community violence and bullying by peers .20
B. Community violence and SAT-9 Mathematics -.24

6. Which one of the following pairs of variables has a weaker relationship between them?

- A. SAT-9 Mathematics and SAT-9 Reading .60
B. SAT-9 Mathematics and GPA .64

7. The correlation coefficient for the relationship between "Bullying by peers" and "GPA" indicates which of the following? - inverse

- A. Those who experience more bullying by peers tend to have higher GPAs.
B. Those who experience more bullying by peers tend to have lower GPAs.

inverse

8. The correlation coefficient for the relationship between "SAT-9 Mathematics" and "SAT-9 Reading" indicates which of the following?

- A. Those who are higher in mathematics tend to be higher in reading.
B. Those who are higher in mathematics tend to be lower in reading.

9. The weakest relationship is between which two variables?

Bullying by Peers & Reading r

Part B: Questions for Discussion

10. Are you surprised that the relationship between "Bullying by peers" and "GPA" is inverse? Explain.

No

11. Are you surprised that the relationship between mathematics and reading is direct? Explain.

No

12. In your opinion, does the Pearson r of $-.26$ prove that being exposed to community violence causes lower GPAs?