

Student Name(s): _____

School Name: _____

Team Number: _____

Middle School DISEASE DETECTIVES

200 points

**Final
New Jersey Science Olympiad
Competitions
2006**



Developed by
Detectives in the Classroom
Montclair State University
Department of Health and Nutrition Sciences
College of Education and Human Services

Relationship between Parental Restrictions on Movies and Adolescent Use of Tobacco and Alcohol

The description of this study was adapted from Dalton, Madeline A, et al., "Relationship between Parental Restrictions on Movies and Adolescent Use of Tobacco and Alcohol," *Effective Clinical Practice*, January / February 2002, Volume 5, Number 1, Pages 1-10. The questions are based on the same source.

Directions: After reading the summary of the epidemiological study in the box below, answer the questions that follow.

Relationship between Parental Restrictions on Movies and Adolescent Use of Tobacco and Alcohol

Context: Viewing smoking and drinking in movies may prompt adolescents to initiate these behaviors. Movies with R ratings contain more smoking than do movies in all other rating categories.

Objective: To evaluate the extent to which parents restrict the exposure of adolescents to R-rated movies and to determine whether such restrictions are associated with decreased tobacco and alcohol use in adolescents.

Design: Cross-sectional, self-administered survey.

Participants: Students in grades 5 through 8 enrolled in New Hampshire and Vermont schools.

Sampling Strategy: Fifteen schools in Vermont and New Hampshire were randomly selected from all middle schools with ≥ 150 students.

Outcome Measures: Students who had tried smoking cigarettes or tried drinking alcohol without parental knowledge.

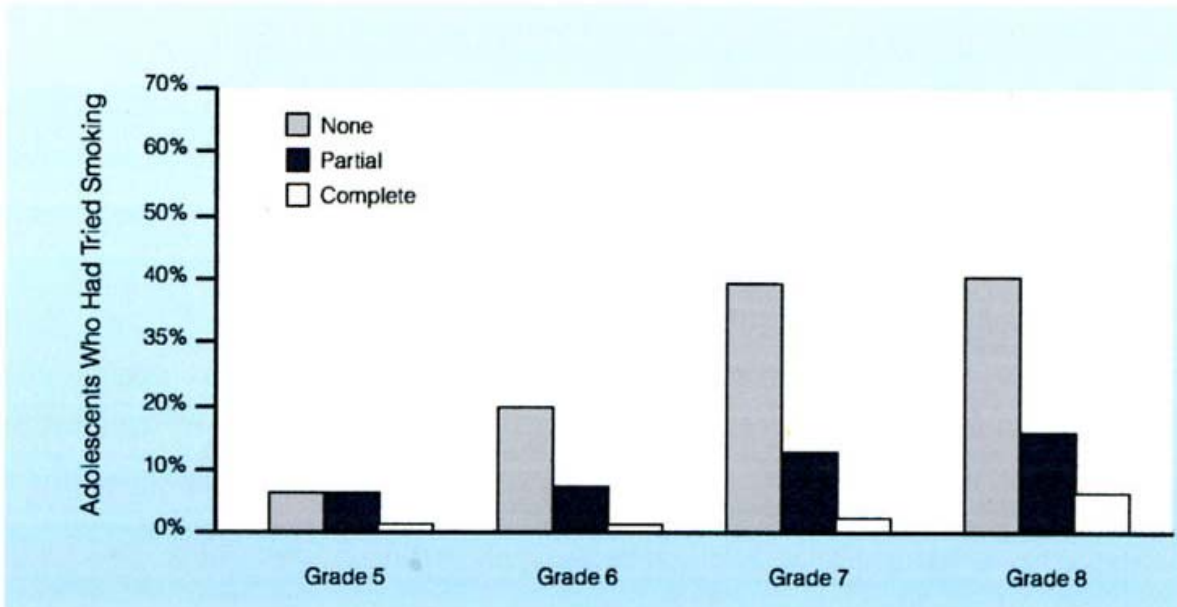
Results: Of 4,544 students surveyed, 801 had tried cigarettes and 1,069 had tried alcohol. Although 90% were younger than 14 years of age, only 16% were completely restricted from viewing R-rated movies. The prevalence of having tried smoking was 35% for those with no restrictions on viewing R-rated movies, 12% for those with partial restrictions, and 2% for those with complete restrictions. The prevalence of having tried alcohol was 46% for those with no restrictions on viewing R-rated movies, 16% for those with partial restrictions, and 4% for those with complete restrictions. Even after controlling for other factors, children who had no restrictions from viewing R-rated movies were significantly more likely to try smoking and alcohol compared with those who had complete restrictions.

Conclusion: Limiting the exposure of adolescents to R-rated movies may prevent early use of tobacco and alcohol.

1. Identify a major strength of the cross-sectional study design. (12 points)

2. Identify a major weakness of the cross-sectional study design. (12 points)

3. The authors present a graph to show the differences in percentages of participants who tried smoking, by three groups of parental restrictions and also by grade. In no more than two sentences, write your interpretation of what the graph shows. (10 points)



4. Results can also be shown using numbers rather than percentages. For example, the authors report that 1,427 participants had no restrictions of R-rated movies, 2,402 had partial restrictions, and 715 had complete restrictions. Based on this information and the information in the summary, place the appropriate numbers in Table A below. (Round-off to the closest whole number.)

Table A: Description of Participants Who Tried / Did Not Try Smoking
Parental Restrictions on R-Rated Movies

| | No Restrictions Number = 1,427 | Partial Restrictions Number = 2,402 | Complete Restrictions Number = 715 |
|------------------------|--------------------------------------|---|--|
| Tried Smoking | | | |
| Did Not Try Smoking | | | |

(12 points)

5. Using the information from Table A above, in the 2x2 table below, fill in the numbers for the four cells and the totals. Note that for this 2x2 table, the contrasting groups of "No Restrictions" and "Complete Restrictions" are being displayed. (The group with "Partial Restrictions" is omitted.) (Round-off to two decimal places.)

| | Tried Smoking | Did Not Try Smoking | Total | Risks | Relative Risk |
|-----------------------|---------------|---------------------|-------|----------------------|----------------------|
| No Restrictions | | | | <input type="text"/> | <input type="text"/> |
| Complete Restrictions | | | | <input type="text"/> | |

Show work.

(27 points)

6. In a single sentence, explain the meaning of the relative risk that you have calculated. (10 points)

7. Using the information from Table A, in the 2x2 table below, label, fill in the numbers, and calculate the risks and relative risk comparing the groups with "No Restrictions" and "Partial Restrictions."

| | Tried Smoking | | Total | Risks | Relative Risk |
|-----------------|---------------|--|-------|----------------------|----------------------|
| No Restrictions | | | | <input type="text"/> | <input type="text"/> |
| | | | | <input type="text"/> | |

Show work.

(27 points)

8. Does this relative risk make you more or less certain that the exposure is associated with the outcome? Explain. (10 points)
9. The researchers did additional computerized analyses that "controlled for" grade, parental disapproval of smoking, maternal supervision, maternal responsiveness, peer and family smoking, and child personality characteristics.

What does "controlled for" mean? (10 points)

10. After controlling for these factors, the relative risk for trying to smoke changed to 3.4, when comparing no restrictions to complete restrictions.

Compare this relative risk to the relative risk you calculated that did not "control for" other influences (question 5). Is it larger or smaller and does this make sense to you? Explain why or why not. (10 points)

11. In the actual article, the authors point out that "... 930 questionnaires were dropped because of missing data." Under what set of circumstances would this missing data have:

a. No affect on the study's outcome (10 points)

b. Increase the size of the association (10 points)

c. Decrease the size of the association (10 points)

12. In the actual article, the authors report that "Movie restrictions were ... inversely associated with ... sibling smoking." What does this mean? (10 points)

