

Parental influences on teen risky behaviors: multivariable approaches

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Bivariate versus Multivariate Approaches

- Bivariate: prediction of a single outcome from one predictor
- Example: how does proportion of students who are binge drinkers, vary by gender of student? This can be presented by use of a bar chart or table of percentages

Multiple regression: prediction of a single outcome variable from two or more factors

- Example: combine all types of substance use into a single score by summing amount of binge drinking, alcohol, tobacco, and marijuana use: call this sum “ATOD”
- Set up a regression equation to predict scores on ATOD from several factors such as: parental monitoring, student attitudes about substance risk, etc.

$$\text{ATOD}' = a + b_1X_1 + b_2X_2 + \dots + b_kX_k$$

X_1 = parental monitoring

X_2 = student grade level

X_3 = student attitudes about risk of substance use

etc.

What can we learn from a multiple regression?

- How well does the entire set of variables predict overall ATOD? (R^2 : proportion of variance in ATOD that can be predicted)
- How much predictive information does each variable (or set of variables) provide uniquely? That is, how important are: demographics/ parent behaviors/ neighborhood variables/ student attitudes?
- We can obtain a proportion of variance uniquely predictable from each variable or set of variables.

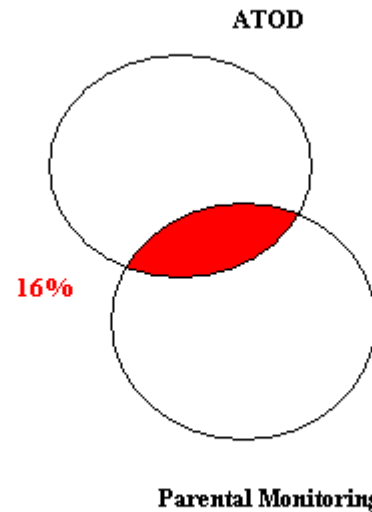
Methodological Problem: when predictor variables are confounded, how can we separate their predictive contributions?

Example: consider parental monitoring (X_1)
and grade in school (X_2)
as predictors of
Alcohol Tobacco and Other Drug use ATOD (Y)

Correlations Among These Variables

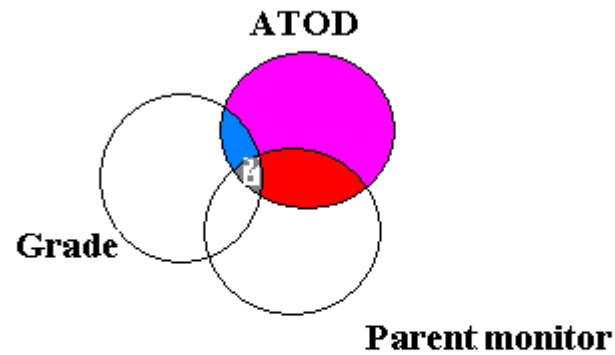
	Parental Monitoring	Grade in School	ATOD
Parental Monitoring	1.00	-.15	-.41
Grade in School		1.00	+.26
ATOD			1.00

The r^2 between variables, or proportion of shared variance, can be graphed as the overlap between circles that represent the total variance for each variable. Here, $r = -.41$, thus r^2 is about 16%.



red area: % of variance in ATOD predictable from Parental Monitoring (the squared correlation between these variables)

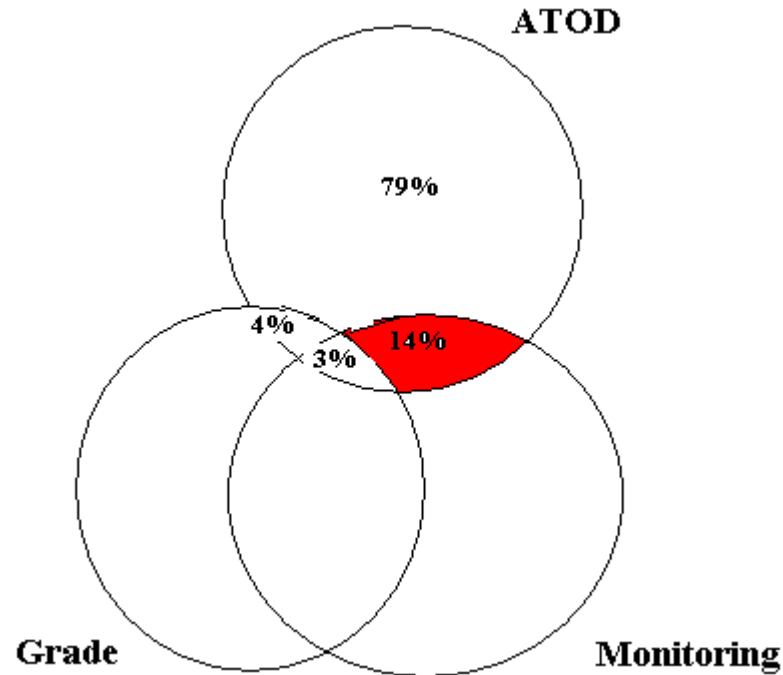
How predicted/explained variance is divided between two correlated predictor variables



red: % var uniquely predictable from monitoring

blue: % var uniquely predictable from grade

14 % of the total Variance in ATOD was uniquely predictable from Parental Monitoring when Grade Level was Statistically Controlled (its variance was treated separately)



Factors at four levels that may predict teen behavior:

- Community/ neighborhood (X_1)
 - School (X_2)
 - Family (X_3)
 - Individual characteristics of teens (X_4)
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- Which among these four sets of factors are more predictive of risky teen behaviors, when all are considered?

Parental monitoring

- If I'll be home late, expected to tell parents
- I tell my parents who I'll be with
- When I go out at night, parents know where
- I talk to parents about plans with friends
- Parents usually ask where I go at night
- Parents know what I do after school
- Parents know how I spend money

Parental Consequences

- If parents knew you smoked/ drank/ had sex, do you think you would get in trouble at home?

Other factors included in analysis:

- Neighborhood support and monitoring
- School attachment
- Parenting style, values, and attitudes
- Youth characteristics -

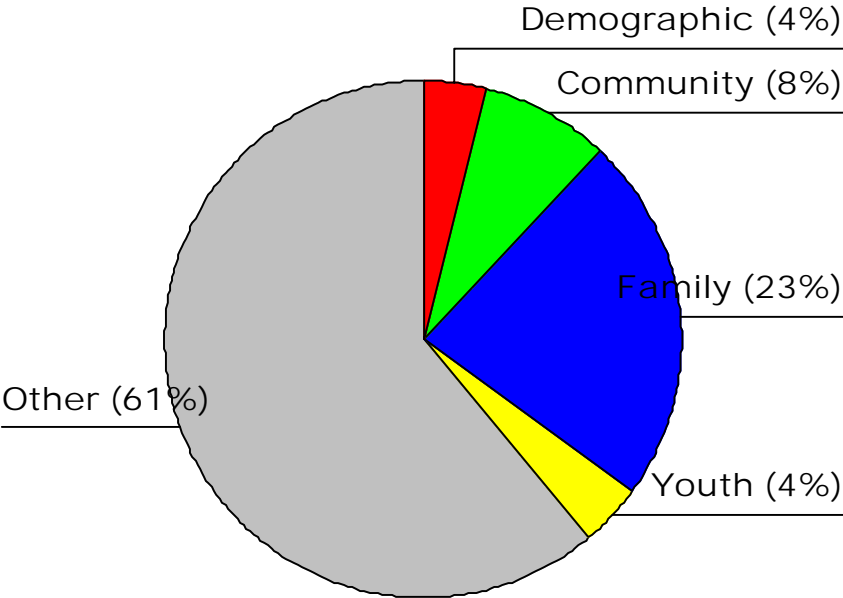
Youth characteristics included in analysis:

- Social responsibility
- Perceived risk of alcohol, drugs, tobacco
- Time spent at home alone
- Time spent working

Predictive Factors at Four Levels:

- Community
 - School
 - Family
 - Individual youth characteristics
-
- Which among these four sets of factors is most predictive of risky teen behaviors?

Proportion of Variance in Teen Substance Use Predicted from Each Set of Variables



Strongest predictor variables:

- Parental monitoring
- Parental consequences
- This study was not an experiment, so we can't say that parent behavior "causes" teen behavior. However, higher levels of monitoring and consequences predicted lower levels of teen substance use.

Implications of Results

- Community, Neighborhood, and Teen's own beliefs are all important, statistically significant predictors of risky behavior.
- However, Parental Behavior was the factor that was most predictive of teen behavior.
- Thus, we may want to focus intervention efforts on improving parent/teen communication.

We should not conclude from this analysis that neighborhood and school influences are necessarily weak

- The proportion of variance uniquely due to differences in perceived neighborhood supportiveness was statistically significant, but relatively small.
- This tells us that existing neighborhood differences are weakly related to levels of teen substance use. If we created much more supportive neighborhoods than any of the neighborhoods examined in past surveys, we might find that these would lead to much lower levels of teen substance abuse.

Other research that confirms the strong parental influence we saw in TAP data

- Numerous other researchers find that teens who perceived strong parental disapproval of smoking are around 50% less likely to smoke (e.g., Sargent & Dalton, 2001).
- However, when parents themselves smoke, their teenage children are highly likely to smoke, even if the parents express disapproval of smoking (Andersen et al., 2002).
- Children whose parents asked them to light parent cigarettes, get cigarettes for parent, and so forth, were very likely to become smokers (Laditano-Laborin & Baker, 2002).

What do we know from TAP data about effective communication with teens?

- Teens know they are expected to keep parents informed about where they are going, what they are doing, and with whom.
- Parents ask where teens are going, know who their friends are, and know how they spend their money.

What do we know from the TAP data about parental monitoring?

- Teens think they would be in trouble at home if they: smoke, drink alcohol, or engage in other risky behaviors.

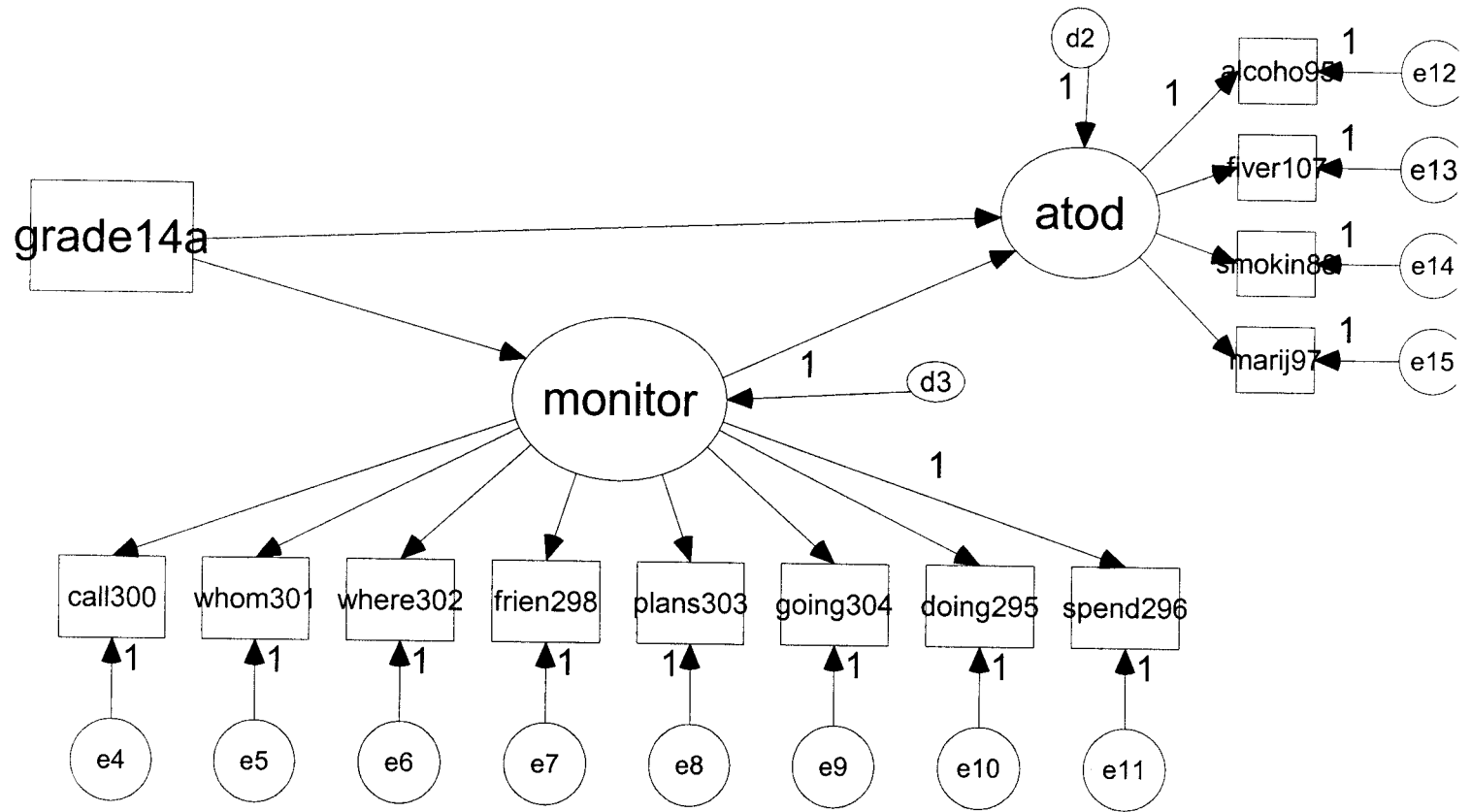
We need to know more: what types of anti smoking or anti risk messages are most effective?

- Most obvious message type: threat messages about long term bad effects on health. Messages about long term negative outcomes are not very effective with teens
- Better approach: focus on immediate negative effects, social skills training for refusal, positive message framing, social norming approaches (Evans, 1984).

Other possible analyses: Structural Equation Models (SEM)

Beyond TAP: other factors that may influence teen behavior

- Mass media/ advertising messages that implicitly or explicitly promote risky behaviors, e.g. attractive people shown smoking on television and in films (e.g. Sargent et al., 2001); youth oriented advertising campaigns (such as the past “Joe Camel” advertisements).
- Youth who watched > 5 hrs TV per day more than 6 times as likely to smoke (Gidwani et al. 2002)



Possible experimental follow up studies

- What types of parental messages are most effective?
- What types of school and community programs are most effective in reduction of teen substance use and other risky behaviors?

What's missing in the research?

- Assessment of teen-parent interaction process: what is being said, and how.
- Other.... To be continued