Predictors of Violent Behavior on School Property: Analysis of 2009 Youth Risk Behavior Survey Data

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Learning Objectives

• List examples of popular performance enhancing substances and reasons for adolescent use.
• List risk factors associated with occurrence of violent behaviors on school property.
Background

• Co-occurrence of aggressive behavior and substance use (e.g. alcohol, cigarettes) are risk factors that may reflect attempts to cope with peer rejection, bullying

• Bullies and bully victims report highest levels of substance use

• Anabolic Androgenic Steroid (AAS) users more likely to die from violence, compared to other substance users

Sources: Radliff et al.,(2012); Hildebrandt & Alfano (2012). Data from: 2009 Youth Risk Behavior Survey.
Performance Enhancing Substances include...

- any drug or substance used for purpose of improving one’s appearance or increasing the likelihood of achievement, success (Hildebrandt & Alfano, 2012)
- illegal substances (e.g. Anabolic Androgenic Steroids) & legal substances (e.g. supplements)

**2009 Youth Risk Behavior Survey: Prevalence Rates (n=16,410)**

- Steroid pills, shots (3.3%)
- Methamphetamine (4.1%)
- Diet Pills, Powders, Liquids (5%)
## YRBS Examples: Substances Considered Performance Enhancing

<table>
<thead>
<tr>
<th>PES</th>
<th>Reasons for Use, Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methamphetamine</td>
<td>Appetite suppression, increased metabolism; weight loss.</td>
</tr>
<tr>
<td>Steroid pills, shots</td>
<td>Enhances development and maintenance of male characteristics. <em>(e.g., Anabolic Androgenic Steroids ; pro-hormones)</em></td>
</tr>
<tr>
<td>Diet Pills, Powders, Liquids (PPL)</td>
<td>Function varies by substance. Diet PPLs may contain stimulants for weight loss. Protein powders, supplements increase muscle development, recovery.</td>
</tr>
</tbody>
</table>
Side Effects

Stimulants

• Increased anxiety, paranoia, violent behavior, aggression, psychosis in high doses; can lead to stroke, cardiac events
• Females: drive for thinness

Anabolic Androgenic Steroids

• Suicidal ideations, depression, impulsive & violent, aggressive behaviors
• Males: Drive for muscularity
Study Aim

• Study Aim: To better understand the relationship of performance enhancing substances to occurrence of violent behavior on school property, using the Centers for Disease Control *2009 Youth Risk Behavior Survey* data.

• Hypothesis: Use of performance enhancing substances (PES) will increase risk for occurrence of violent behavior (i.e., carrying a weapon, fighting, injured/threatened with a weapon) on school property.
Methods

- The 2009 National YRBS is conducted biennially by the Centers for Disease Control, on students attending grades 9-12.
- Bandura’s *Social Cognitive Theory* guided identification of personal, environmental, and behavioral factors contributing to occurrence of violent behaviors on school property (fighting, carrying weapon, threatened/injured with weapon)
- Structural equation modeling was performed to assess the hypothesized model surrounding violent behaviors occurring on school property.
Methods

• One latent response variable was represented by three dependent variables (i.e., fighting, carried weapon, threatened/injured with weapon on school property).
• The factor structure of the latent variables was evaluated (e.g. Violent Behavior, Depression Related Personal Factor, Alcohol-Smoke Behavioral Factor, and Diet Related Behavioral Factor).
• SAS 9.2 was used to account for the complex sample design; PRO CALIS was used to create the structural model. p < .05 was considered significant.
Standardized Path Coefficient of Postulated Structural Equation Model

**Latent Exogenous Factors**
- Sad
- Suicide
- Smoke
- Drink
- Vomit
- Fast

**Latent Endogenous Factors**
- Depression Related Personal Factor
- Alcohol Smoke Behavioral Factor
- Diet Related Behavioral Factor
- Observed Variables

**Observed Variables**
- Gender (Male)
- Bullied
- Meth
- Steroid
- Diet Pill
- Violent Behavior
- Fight
- Weapon
- Injure
- Age
Results

- The structural model was tested by adding hypothesized direct paths between the latent factors and observed variables into the baseline measurement model.

- Only significant paths were kept and the non-significant path from Gender to Diet Pill was removed from the structural model. In addition, we allowed co-variances between the three exogenous latent factors and residual correlations.

- All the factor loadings of the indicators were significant on each corresponding latent factor and ranged from 0.45 to 0.84, implying the observed indicators well represented their own latent factors, accordingly.
Results

• Approximately 11% of adolescents reported being in a fight and 5% carried a weapon on school property, with the highest rates occurring in males.

• The structural model provided acceptable levels of model fit: $X^2 = 1483.73$, df = 61, $p < .001$; GFI = 0.986; RMSEA = 0.040 (90% CI = 0.039-0.042); CFI = 0.957 and NNFI = 0.925.

• All indicators loaded significantly on their respective factors ($p < .001$).
Conclusion

• This study considered PES use as a risk for violent behavior; Social Cognitive Theory was useful as an organizing framework for this large national sample of adolescents.

• The use of existing nationally representative data allows findings to be translated into practice faster than could be achieved with primary data collection.

• Violent behaviors occurring on school property contribute to adolescent morbidity and mortality, and some may be preventable.

• The findings from this study have implications for school nurses, teachers, coaches who must assess for presence of risk factors in adolescents and recommend intervention programs to supplement school curricula.
The Massachusetts Aggression Reduction Center (MARC) provides bullying and cyberbullying programs and resources. See http://webhost.bridgew.edu/marc/

**ATLAS & ATHENA**
Athletes Training & Learning to Avoid Steroids-Athletes Targeting Healthy Exercise & Nutrition Alternatives
http://www.atlasathena.org/

http://www.pbis.org/

http://www.pacer.org/bullying/


## Results

<table>
<thead>
<tr>
<th>Paths</th>
<th>Direct</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>t</td>
<td>P</td>
</tr>
<tr>
<td><strong>Mediated Paths</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression Related Personal Factor → (Meth, Steroid, Diet Pill) → Violent Behavior</td>
<td>.037</td>
<td>2.32</td>
<td>.020</td>
</tr>
<tr>
<td>Alcohol Smoke Behavioral Factor → (Meth, Steroid, Diet Pill) → Violent Behavior</td>
<td>.166</td>
<td>13.70</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Diet Related Behavioral Factor → (Meth, Steroid, Diet Pill) → Violent Behavior</td>
<td>.155</td>
<td>9.76</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Gender → (Meth, Steroid) → Violent Behavior</td>
<td>.179</td>
<td>19.14</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Age → (Meth, Steroid, Diet Pill) → Violent Behavior</td>
<td>-.058</td>
<td>-6.16</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Bullied → (Meth, Steroid, Diet Pill) → Violent Behavior</td>
<td>.117</td>
<td>13.29</td>
<td>&lt;.001</td>
</tr>
<tr>
<td><strong>Direct Paths</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meth → Violent Behavior</td>
<td>.271</td>
<td>23.87</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Steroid → Violent Behavior</td>
<td>.279</td>
<td>27.07</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

*Standardized Direct, Indirect, and Total Effect of Paths to Violent Behavior*

$\beta = \text{Standardized path coefficient}$