Substance use in popular movies
Prevalence, effects on European adolescents, and opportunities for primary prevention - a cross-cultural study -

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BACKGROUND

According to social learning theory, movie depictions of smoking and drinking are a potentially powerful socializing agent.
OBJECTIVES

(1) To measure the frequency of substance use in movies,

(2) To estimate the effects of movie rating policies on movie substance use exposure,

(3) To investigate the influence of such depictions on substance use initiation in adolescence, and

(4) To recommend preventive measures.
DESIGN

Longitudinal survey with two waves and a one year interval.

SETTING

115 public schools in six European countries – Germany, Iceland, Italy, Netherlands, Poland, and UK.
Survey in six European countries

Overall:
n = 16,551
Ø = 13.4 years

Thorax 2011, 66: 875-883
Generate Survey Movie List

Randomly selected 50 movies for each survey

Survey Adolescents

Questionnaire assesses which of the 50 movies the adolescent has ever seen

Movie Content Analysis

Count smoking/alcohol depictions

Merge

Number movie smoking/alcohol depictions seen

Beach Method

Commun Methods Meas 2008;2:134-151
Cross-sectional analysis
Exposure to smoking in movies among adolescents from six European countries


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Association between exposure to movie smoking and ever-smoking


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Exposure to alcohol consumption in movies among adolescents from six European countries

- Germany
  - M = 3268 (SD = 2416)
  - Mdn = 2748

- Iceland
  - M = 5220 (SD = 2187)
  - Mdn = 5172

- Italy
  - M = 5281 (SD = 3011)
  - Mdn = 4993

- Netherlands
  - M = 3242 (SD = 2006)
  - Mdn = 2951

- Poland
  - M = 5158 (SD = 2787)
  - Mdn = 4738

- UK
  - M = 4621 (SD = 2265)
  - Mdn = 4414

- Total
  - M = 4613 (SD = 2655)
  - Mdn = 4305

Pediatrics, in press
Association between exposure to alcohol use in movies and binge drinking

Note:
- $\beta =$ Regression Coefficient
- Figures in brackets = 95% Confidence Interval
- adj. = adjusted
- n.s. = not significant; * = $p<0.01$; ** = $p<0.001$
Sensitivity analysis: Lifetime Binge Drinking

Correlation between exposure to movie smoking and movie alcohol use: $r=0.83$

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure to movie alcohol use</td>
<td>0.09***</td>
</tr>
<tr>
<td>Exposure to onscreen smoking</td>
<td>0.03</td>
</tr>
<tr>
<td>Age</td>
<td>0.03***</td>
</tr>
<tr>
<td>Gender (0=male, 1=female)</td>
<td>0.01</td>
</tr>
<tr>
<td>Family affluence</td>
<td>-0.00</td>
</tr>
<tr>
<td>School performance</td>
<td>-0.05***</td>
</tr>
<tr>
<td>TV screen time</td>
<td>-0.00</td>
</tr>
<tr>
<td>Sensation seeking/ rebelliousness</td>
<td>0.10***</td>
</tr>
<tr>
<td>Peer drinking</td>
<td>0.13***</td>
</tr>
<tr>
<td>Mother drinking</td>
<td>0.01</td>
</tr>
<tr>
<td>Father drinking</td>
<td>0.01</td>
</tr>
<tr>
<td>Sibling drinking</td>
<td>0.05***</td>
</tr>
</tbody>
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Pediatrics, in press
Longitudinal analysis
Baseline sample
16,551

Follow-up sample (at least 1 year later)
13,642 (82%)

Baseline never-smokers
9,987 (74%)
  
  1,692 (17%)
  initiated smoking

Baseline never binge-drinkers
10,245 (75%)
  
  2,276 (22%)
  initiated binge drinking
Smoking initiation during observation period

Exposure to movie smoking

Quartile 1: 13%
Quartile 2: 15%
Quartile 3: 17%
Quartile 4: 20%

Multilevel mixed-effects Poisson regressions with random intercepts for country, school, and class adjusted for:
Age, gender, TV time, grades in school, friend smoking, sibling smoking, parent smoking, sensation seeking, family affluence

IRR: 1.3, n.s.
IRR: 1.5***
IRR: 1.8***
Binge drinking initiation during observation period

Exposure to movie alcohol use

Quartile 1: 17%
Quartile 2: 20%
Quartile 3: 24%
Quartile 4: 26%

Multilevel mixed-effects Poisson regressions with random intercepts for country, school, and class adjusted for:

- Age, gender, TV time, grades in school, friend drinking, sibling drinking, parent drinking, sensation seeking, family affluence
Prevention

Population

Change of the environment
Restricting youth access to movies which portray substance use

Individual

Change of the behavior
Programs to enhance media literacy in children and parents
Counter-advertising
Recommendations

(1) Restricting youth access to movies which portray smoking

(2) Anti-tobacco ads before movies that depict smoking
Same recommendations
Youth access to movies that contain smoking in Europe compared with the USA

Movies Without Smoking (N=145)

- Europe: 133
- USA: 124

Movies With Smoking (N=319)

- Europe: 271
- USA: 189

<table>
<thead>
<tr>
<th>Movie rating</th>
<th>below 16 years</th>
<th>16 years and older</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>12</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>USA</td>
<td>130</td>
<td>48</td>
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</table>

Tob Control, in press
Spending on public information campaigns according to Tobacco Control Scale, 2010 (Max: 15 points)
Summary

(1) Smoking and drinking is frequently portrayed in movies, and European youth is exposed to these behaviors

(2) Substance use in movies is associated with youths’ substance use

(3) There are preventive measures available both at the population but also at the individual level

(4) Currently these preventive measures are not implemented