Preteen Marijuana Use: Harmless or Harmful?

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INTRODUCTION

- Marijuana (MJ) is the number one illicit drug used by youths.
- It is cheap, widely available, and considered harmless by many: in 2004, 16% of 8th graders and 46% of 12th graders reported lifetime use.
Introduction

- Psychiatric comorbidity associated with marijuana:
  - increased anxiety and depression
  - schizophrenia
- Cognitive impairment with long term use
- Psychosocial consequences:
  - school dropout, legal problems
Introduction

- Earlier MJ use associated with worse outcomes:
  - Development of MDD
  - Higher rates of suicide
  - Subsequent use of MJ and other illicit drugs
INTRODUCTION

- Addiction research in child psychiatry is limited
- Youths with substance dependence disorders (SDD) are excluded from most investigations
- Lack of empirical evidence of potential harms from MJ.
INTRODUCTION

In order to effectively treat the disease and optimize the benefits of treatment, there is a need to study substance dependent youth, as well as identify the factors associated with SDD severity including Preteen Marijuana use (PMU) and factors impeding positive outcomes.
Because presenting clinical characteristics influence the likelihood of treatment completion that in turn influences the odds of sustaining abstinence post-treatment, this study explores predictors of patient clinical status at intake.
INTRODUCTION

The aim of this study is to:

+ Confirm PMU as harmful
+ Delineate factors that distinguish PMU from teen marijuana users (TMU) and explore potential precursors of PMU

We hypothesized that PMU use is associated with:

+ Increased number of (SDD)
+ Elevated anxiety symptomatology
+ Suicidal history
+ Increased legal problems
METHODS

SUBJECTS:
- Inclusion: DSM-IV Dx for SDD
- Exclusion: Severe organic impairment, current SI/HI
- Medically detoxed prior to admission

PROCEDURES:
- University Hospitals Case Medical Center IRB approved
- Gathered by multiple informants:
  - Semi-structured rater administered youth interviews
  - Youth, parent, clinician reports
  - Medical chart records
METHODS

MEASURES:
- PMU defined: first use of MJ < 13 years
- MINI-Plus: DSM IV diagnosis, age of first use, suicidality
- Teen Treatment Services Review: Legal involvement
- Time Line Follow-Back Interview: Level of substance consumption
METHODS

STATISTICAL ANALYSIS:

- Univariate comparisons using Fisher’s Exact Test or Kruskal-Wallis Chi-Square Test
- Forward step-wise regression predicting PMU
  - Predictor variables: Variables associated with PMU from univariate analyses
  - Main effects entered first followed by interaction terms with PMU
<table>
<thead>
<tr>
<th>Background Variable</th>
<th>Categorical Level</th>
<th>Total (N, %)</th>
<th>Preteen Marijuana Use</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>136 (100%)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>N=79 (58%)</td>
<td>N=57 (42%)</td>
</tr>
<tr>
<td>Gender</td>
<td>M</td>
<td>64 (47%)</td>
<td>38 (48%)</td>
<td>26 (46%)</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>72 (53%)</td>
<td>41 (52%)</td>
<td>31 (54%)</td>
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<tr>
<td>Race</td>
<td>Non-Minority</td>
<td>90 (66%)</td>
<td>52 (66%)</td>
<td>38 (67%)</td>
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<tr>
<td></td>
<td>Minority</td>
<td>46 (34%)</td>
<td>27 (34%)</td>
<td>19 (33%)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Hispanic</td>
<td>10 (7%)</td>
<td>2 (3%)</td>
<td>8 (14%)</td>
</tr>
<tr>
<td></td>
<td>Non-Hispanic</td>
<td>126 (93%)</td>
<td>77 (97%)</td>
<td>49 (86%)*</td>
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<tr>
<td>Single-parent household</td>
<td>Yes</td>
<td>78 (57%)</td>
<td>43 (54%)</td>
<td>26 (46%)</td>
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<tr>
<td>Grade</td>
<td>Middle School</td>
<td>6 (4%)</td>
<td>0 (0%)</td>
<td>6 (11%)</td>
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<tr>
<td></td>
<td>Junior High</td>
<td>71 (52%)</td>
<td>37 (47%)</td>
<td>34 (60%)</td>
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<tr>
<td></td>
<td>Senior High</td>
<td>54 (40%)</td>
<td>23 (48%)</td>
<td>16 (28%)</td>
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<tr>
<td></td>
<td>High School Graduate</td>
<td>1 (1%)</td>
<td>1 (1%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td></td>
<td>Drop out</td>
<td>4 (3%)</td>
<td>3 (4%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Years of Education (Parent)</td>
<td>8th grade or less</td>
<td>2 (1%)</td>
<td>5 (6%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td></td>
<td>Partial high school</td>
<td>10 (8%)</td>
<td>2 (2%)</td>
<td>8 (14%)*</td>
</tr>
<tr>
<td></td>
<td>HS diploma/GED</td>
<td>42 (32%)</td>
<td>22 (28%)</td>
<td>20 (35%)</td>
</tr>
<tr>
<td></td>
<td>Some college</td>
<td>38 (29%)</td>
<td>21 (27%)</td>
<td>17 (30%)</td>
</tr>
<tr>
<td></td>
<td>BA+</td>
<td>40 (30%)</td>
<td>29 (37%)</td>
<td>11 (19%)</td>
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<tr>
<td>Parental History of SDD</td>
<td>Yes</td>
<td>73 (54%)</td>
<td>39 (49%)</td>
<td>34 (60%)</td>
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<tr>
<td>Age at treatment</td>
<td>M (SD)</td>
<td>16.23 (1.10)</td>
<td>16.49 (1.05)</td>
<td>15.86 (1.08)***</td>
</tr>
</tbody>
</table>

* p<.05  ** p<.01  *** p<.001
RESULTS

Background Characteristics: (Table 1):
- N=136 SDD youth
- aged 14-18
- 53% female
- 57% single parent households
- 54% had parental SDD
- 34% minority
| TABLE 2. Current Substance Dependency Disorders and Nicotine Use by Preteen Marijuana User Status |
|------------------------------------------|----------------|----------------|
|                                         | Total          | Preteen Marijuana Use |
|                                         | 136 (100%)     | No             | Yes           |
|                                         |                | N=79 (58%)     | N=57 (42%)    |
| **AUD = Alcohol Dependency**            | 76 (56%)       | 48 (61%)       | 38 (67%)      |
| **SLUD = Substance Dependency**         |                |                |               |
| Stimulants                              | 125 (92%)      | 70 (89%)       | 55 (96%)      |
| Cocaine                                 | 35 (26%)       | 20 (25%)       | 15 (26%)      |
| Narcotics                               | 44 (32%)       | 23 (29%)       | 21 (15%)      |
| Hallucinogens                           | 43 (32%)       | 22 (28%)       | 21 (37%)      |
| Inhalants                               | 46 (34%)       | 21 (27%)       | 25 (44%)*     |
| Marijuana                               | 9 (7%)         | 5 (6%)         | 4 (7%)        |
| Tranquilizers                           | 115 (85%)      | 61 (77%)       | 54 (95%)*     |
| Total number of SSD (M, SD)             | 2.94 (2.13)    | 2.59 (2.00)    | 3.42 (2.22)*  |
| **Nicotine Use**                        | 105 (77%)      | 60 (76%)       | 45 (79%)      |
| Total Days of Use in Past Month (M, SD) | 17.04 (12.09)  | 15.96 (12.26)  | 18.5 (11.81)  |
| Cigarettes per day (M, SD)              | 8.99 (8.78)    | 7.54 (7.05)    | 10.98 (10.50)* |
| Time after waking to first use (M, SD)  | 154.70 (293.00)| 181.86 (316.69)| 117.05 (254.52)|

* p<.05  **p<.01  ***p<.001
RESULTS

SDD Rates (Table 2):
- 85% MJ dependent
- 42% PMU, 58% TMU
- 77% Nicotine dependent
- 56% Alcohol Dependent
RESULTS

- Background Characteristics and SD rates: PMU v. TMU users (Tables 1-2)
- PMU users more likely to have:
  - Hispanic background
  - Less Educated Parents
  - Earlier admission
  - MJ dependence
  - Hallucinogen dependence
  - More comorbid SDD
  - Increased daily cigarette use
<table>
<thead>
<tr>
<th>Current Anxiety Disorder Status</th>
<th>Total</th>
<th>Preteen Marijuana Use</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>136 (100%)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Panic</td>
<td>8 (6%)</td>
<td>5 (6%)</td>
<td>3 (5%)</td>
</tr>
<tr>
<td>Agoraphobia</td>
<td>17 (13%)</td>
<td>11 (14%)</td>
<td>6 (11%)</td>
</tr>
<tr>
<td>Social Phobia</td>
<td>16 (12%)</td>
<td>11 (14%)</td>
<td>5 (9%)</td>
</tr>
<tr>
<td>Obsessive Compulsive</td>
<td>5 (4%)</td>
<td>2 (3%)</td>
<td>3 (5%)</td>
</tr>
<tr>
<td>Post Traumatic Stress</td>
<td>14 (10%)</td>
<td>5 (6%)</td>
<td>9 (16%)*</td>
</tr>
<tr>
<td>Generalized Anxiety</td>
<td>10 (7%)</td>
<td>6 (8%)</td>
<td>4 (7%)</td>
</tr>
<tr>
<td>Any Anxiety Disorder</td>
<td>39 (29%)</td>
<td>24 (30%)</td>
<td>15 (26%)</td>
</tr>
<tr>
<td>Legal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of Traffic Violations</td>
<td>5 (4%)</td>
<td>1 (1%)</td>
<td>4 (7%)*</td>
</tr>
<tr>
<td>History of Assault</td>
<td>39 (28%)</td>
<td>19 (24%)</td>
<td>20 (35%)</td>
</tr>
<tr>
<td>History of Burglary</td>
<td>19 (14%)</td>
<td>9 (11%)</td>
<td>10 (18%)</td>
</tr>
<tr>
<td>Ever on Parole or Probation</td>
<td>113 (83%)</td>
<td>64 (81%)</td>
<td>49 (86%)</td>
</tr>
<tr>
<td>Ever Jailed or Incarcerated</td>
<td>87 (64%)</td>
<td>48 (61%)</td>
<td>39 (68%)</td>
</tr>
<tr>
<td>Number of Arrests (M, SD)</td>
<td>2.68 (2.67)</td>
<td>2.48 (2.04)</td>
<td>2.95 (3.36)</td>
</tr>
<tr>
<td>Suicide Attempt History</td>
<td>33 (24%)</td>
<td>15 (19%)</td>
<td>18 (32%)*</td>
</tr>
</tbody>
</table>

*p < .05  **p < .01  ***p < .001
RESULTS

Comparison of First-Use Illicit Substance Type: TMU vs. PMU
RESULTS

- Psychosocial outcomes: PMU vs TMU (Table 3)
- PMU users are significantly more likely to enter treatment with:
  - PTSD history
  - Suicide attempts
  - Traffic violations
  - MJ = 1st substance used
- Majority (55%) of PMU adolescents with SDD first used MJ (Figure 1)
DISCUSSION

This study supports a significant relationship between PMU and poor outcomes:

- Largest clinical sample to date with equal proportions of SDD girls and boys
- PMU $\rightarrow$ enter Tx with more impairment
  - More comorbid SDD’s
  - MJ and hallucinogen dependent
  - Smoke more
  - Younger
  - More suicide attempts
  - Current PTSD
  - History of traffic violations
DISCUSSION

Strengths Include:
- Large clinical sample with MJ dependency
- High % of females and minorities
- Methodological rigor
- Diagnostic assessments: court records, medical charts, multiple informants
DISCUSSION

Liabilities Include:
- Study is retrospective
- Selection bias (treatment seeking population)
- The association with worse outcomes is not necessarily causal: teens with PTSD could be using MJ to self-medicate
- The increased suicide attempts might be related to an increased rate of comorbid depression which was not specifically identified in our study
DISCUSSION

The rate of current anxiety disorders in our study population (29%) is congruent with rates found in prior research of psychiatric comorbidity among adolescents with SDD (7 to 40%).

Identified Factors with intervention implications:
- MJ is most likely to be the first substance used by preteen youth (55% v. 40%)
- TMU users more likely to first use with Alcohol (51% v. 34%)
- Less parental education = higher risk
- Vulnerable populations = higher risk
- Trend toward increased nicotine use
FUTURE DIRECTIONS

- Identify age of first use prospectively
- Need to follow the sample to determine:
  - If improvement in outcomes is seen after Tx
  - If preteen MJ is associated with less response to Tx
FUTURE DIRECTIONS

- Evidence could inform policies re: legalizing marijuana use
  - Adolescent brain growth is at its peak at age 12, a vulnerable threshold age as shown by results of this study
  - Future research is needed to understand how PMU interferes with this major growth spurt
  - This study could be used to support policy reform aimed at preventing or delaying first MJ use especially in vulnerable populations
REFERENCES


REFERENCES


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