Intervention effects on stage transitions for adolescent smoking and alcohol use acquisition

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BACKGROUND
- Cigarette smoking represents the largest preventable cause of death and alcoholic beverages represent the most common psychoactive substance used by young people in the US.\textsuperscript{1}
- A recent school-based intervention reported findings from a Transtheoretical Model (TTM) computer-delivered, multiple behavior intervention in middle school students.\textsuperscript{2}
- Students in an energy balance intervention effectively reduced smoking and alcohol acquisition relative to the substance use intervention condition, despite no direct treatment.
- In light of these findings, a detailed look at the underlying process of stage change for students who are not yet smokers or drinkers will inform future intervention studies aimed at preventing substance use.

Goals of current study:
1. Characterize the best pattern of stage movement (see Table 1 models #1-4).
2. Test whether the identified pattern was stable from grades six to nine (see Table 1 models #5-8).
3. Determine whether the substance use prevention intervention effectively kept adolescents in acquisition stages (see Table 1 models #9-13).

METHODS
Baseline Sample
- 6th grade school students (N=4,158) were:
  - 47.8% female
  - 65.0% white, 15.6% Hispanic, 3.8% Black, 2.4% Asian, 2.2% American Indian/Alaskan Native, 0.5% Pacific Islander
  - Ranged in age from 10-15 years (M=11.4, SD=0.7)
- School-based, computer delivered, TTM-tailored multiple behavior intervention across 20 Rhode Island Middle Schools, two interventions:
  - Substance Use Prevention (SP): focus on prevention of smoking and alcohol use
  - Energy Balance (EB): focus on physical activity and eating behaviors

Measures
- Stages of change for smoking/alcohol acquisition:
  - acquisition Precontemplation (aPC)
  - acquisition Contemplation (aC)
  - acquisition Preparation (aPR)
  - Smoker/Drinker

Table 2. Stage distribution by intervention group.

<table>
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<th>SP Intervention (N=1,974)</th>
<th>EB Intervention (N=2,184)</th>
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<tr>
<td></td>
<td>%</td>
<td>N</td>
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<tr>
<td>Baseline Smoking Stage</td>
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<td>5</td>
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<td>aPR</td>
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<tr>
<td>Baseline Alcohol Use Stage</td>
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<td></td>
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<tr>
<td>aPR</td>
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Statistical Analyses
- SAS version 9.4 with the PROC LCA/LTA SAS Macro.
- Markov models to estimate: stage membership and transition probabilities across four time points (6th, 7th, 8th, 9th grade).
- Nested model comparisons to determine best fitting model (see Table 2).\textsuperscript{3}
- Full-information maximum likelihood for missing data.

RESULTS

Figure 1. Smoking Transitions (Model 14).

Figure 2. Alcohol Transitions (Model 14).

Figure 3. Summary of main findings.

CONCLUSION
- Most students report not being interested in trying smoking or drinking, yet by grade nine ~11% had tried smoking and ~13% had tried drinking.
- Findings from this study demonstrated that students in aPC were less likely to try smoking or drinking than students in aC or aPR.
- Contrary to the original hypothesis that the substance use intervention would result in lower rates of substance use acquisition, the comparison intervention resulted in a lower number of students transitioning to trying smoking or drinking.
- Both interventions, however, appear to have provided protective effects on smoking and alcohol use acquisition in adolescents.

REFERENCES

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