ADDRESSING THE RELATED
EPIDEMICS OF
FINANCIAL/MATHEMATICAL
ILLITERACY AND ADOLESCENT
PROBLEM GAMBLING

W.S. Mallios and R.R. Mallios
Mallios Associates

Results of the 2005 CSU Business Assessment Test

The CSU system (23 campuses with 437,000 students) is the largest US university system

Percent of questions answered correctly within each of eight business disciplines (n=2454)

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Management</td>
<td>51.64%</td>
</tr>
<tr>
<td>Accountancy</td>
<td>48.60%</td>
</tr>
<tr>
<td>Business Law</td>
<td>49.92%</td>
</tr>
<tr>
<td>Statistics</td>
<td>41.62%</td>
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<tr>
<td>Finance</td>
<td>38.11%</td>
</tr>
<tr>
<td>Economics</td>
<td>46.23%</td>
</tr>
<tr>
<td>Marketing</td>
<td>55.88%</td>
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<tr>
<td>Mgt Info Syst</td>
<td>63.14%</td>
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Results of the Business Assessment Test provided evidence of financial/mathematical illiteracy among graduating business students at the bachelors level.

During this period, there were press reports of excessive gambling by undergraduate students.

Objective: Design a study that measures levels of problem gambling. Estimate relations, if any, between levels of financial/mathematical literacy and levels of problem gambling.
A questionnaire was designed and administered anonymously to 250 mostly business students (mostly upper division) at CSU Fresno.

Questionnaire was composed of basic financial and mathematical multiple choice questions and the South Oaks Gambling Screen—Revised for Adolescents (SOGS-RA).
Selected Results

78% did not know that bond prices and interest rates moved in opposite directions.

79% did not know the meaning of selling short.

72% did not know the meaning of a bear market.

74% answered the following question incorrectly. *Suppose you deposit $1000 in a savings account at an interest rate of 5% compounded annually. What will be the total worth of your savings in two years?*
Students were also asked to express their views on American society through the following choices:

Despite its shortcomings, American society offers equal opportunity—a fair chance for advancement. (44%)

For many, the window of opportunity in America is limited. (29%)

Though some get ahead through merit, the gospel of equal opportunity is basically a sham. (13%)

No opinion. (14%)

Subsequent analyses showed that low test scores were associated with apparent societal disenchantment that is reflected by answers to the last question.
At what age did you first gamble for money?

A. Never gambled (14%)  
B. Before high school (23%)  
C. During high school (37%)  
D. During college (26%)

Results of SOGS_RA scoring

Level 1: Non gambler  61.6%  
Level 2: At risk gambler  20.5%  
Level 3: Problem gambler  17.9%

These results are comparable to those from a study conducted on institutionalized adolescents in Louisiana. A comparable Oregon study produced the following percentages: 84.7%, 11.2% and 4.1%. 
CSU Fresno survey results: Gambling profile levels (SOGS_RA) within each financial literacy level

Financial/Mathematical Literacy Levels Versus Gambling Profiles

<table>
<thead>
<tr>
<th>SOGS-RA</th>
<th>NonG</th>
<th>AtRiskG</th>
<th>ProbG</th>
</tr>
</thead>
<tbody>
<tr>
<td>F/M Literacy Levels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>30%</td>
<td>30%</td>
<td>40%</td>
</tr>
<tr>
<td>Medium</td>
<td>40%</td>
<td>37%</td>
<td>23%</td>
</tr>
<tr>
<td>High</td>
<td>43%</td>
<td>39%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Gambling Profile Levels Within Ethnicity.

<table>
<thead>
<tr>
<th>Gambling Profiles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnicity</td>
</tr>
<tr>
<td>Asian/Asian Amer.</td>
</tr>
<tr>
<td>Black</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
</tr>
<tr>
<td>White/Caucasian</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>
Asians/Asian Americans have a propensity to both gamble and excel in finance and mathematics.

Two huge casinos in Connecticut--Foxwoods and Mohegan Sun--send more than 100 buses every day to pick up customers in predominantly Asian neighborhoods of Boston and New York…In a Washington Post article titled "Casinos Are Aggressively Courting Asian Americans,"… Chinese government is aware of problem.
Discriminant Analysis: Results

LEV = 0 if gambling profile = NonG (non gambler)
LEV = 1 if gambling profile = AtR/ProbG (at risk or problem gambler)

1. The greater the participation in internet gambling, the greater the likelihood of LEV=1;
2. The greater the percentage of friends that have gambling problems, the greater the likelihood of LEV=1;
3. Females are less likely to be problem gamblers than males;
4. The greater the Financial Literacy Score (FLS), the less the likelihood of LEV=1;
5. However, the greater the FLS and the greater the amount gambled on any day, the greater the likelihood of LEV=2;
6. And the greater the FLS and the greater the frequency of playing the numbers or betting on lotteries, the greater the likelihood of LEV=2.
Recommendations

Initiate intervention programs in at least three areas:

1. Identify adolescent at risk/problem gamblers and refer them to effective treatment programs beginning at the high school,
2. Establish effective treatment programs whenever necessary and evaluate the effectiveness of all programs,
3 Develop instruction in financial/gambling literacy that is tailored for each semester of high school.
Robert Wood Johnson Foundation Grant:

Problems areas

Informed consent
Matching funds from local agencies
Teachers’ union
The term *innumeracy* was coined to describe an endemic deficiency: *a lack of grasp of numbers.*

Innumeracy and financial illiteracy are inextricably related and may be described as ongoing epidemics based on common viruses. If so, what are the origins?

*American high schools are obsolete. Until we design them to meet the needs of the 21st century, we will keep limiting—even ruining—the lives of millions of Americans.* (Bill Gates)

Intervention programs are necessary to address both problem gambling and financial/mathematical illiteracy—with particular emphasis on adolescents.