Designing Effective Approaches to Protect Young Drivers

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Teen Driver Workshop
Centers for Disease Control
Atlanta GA
Effective programs/policies

Understanding human behavior

GDL as an example
  - Detail on NC GDL Effects

Other promising directions

Promising communication strategy
Elements of Intervention Effectiveness

- Conceptual Soundness
- Implementation Fidelity
- Desired Outcome

- Difficult
- Astoundingly Difficult
- Distressingly Rare
Trouble on the road to intervention:

- **Task difficulty**
  - This isn’t “Rocket Science”… it’s harder!
    - Common sense, personal experience are poor guides
    - Often wrong, always inadequate
  
- **Self-handicapping**
  - Fail to use available knowledge
    - Social/behavioral sciences
  
- Misuse of groups (focus & other)
A Typical Conceptual Model of Underage Drinking

Knowledge about risks of drinking → Underage drinking

Penalty for (illegal) drinking → Underage drinking
Theoretical Bases for Initiative to Reduce Underage Drinking

Macro/Societal Level

- Alcohol-related Public Policy
  - mandated server training
  - dramshop liability
  - social host liability
  - license restrictions
  - excise tax
  - mandated compliance checks
  - alcohol sales restrictions
  - advertising restrictions

- Social/Institutional Structures
  - alcohol distribution system
  - social class
  - religious composition
  - business

- Market Mechanisms
  - income
  - response to demand
  - stimulation of demand

- Legal Availability
  - minimum drinking age
  - hours of sale
  - no service to intoxicated

- Formal Social Controls
  - size of threat
    - probability of detection
    - probability of threat application
    - speed of threat application

- Economic Availability
  - alcohol price
  - search and acquisition costs
  - disposable income

- Physical Availability
  - quantity accessible
  - geographic density of outlets
  - proximity to outlets

- Social Availability
  - prevalence of alcohol images
  - social class
  - religious composition
  - business

Micro/Individual Level

- Intervening
  - Interpersonal Variables
    - models of drinking
    - social roles
    - social interaction
  - Individual Factors
    - cognitions and perceptions
      - personality
      - biological
      - conditioned responses

- Drinking Behavior
  - minimum drinking age
  - hours of sale
  - no service to intoxicated

- Alcohol-Violence
  - health outcomes
  - psychosocial outcomes

Source: Wagenaar, 1997
A simple truth

HUMAN BEINGS ARE NOT VERY EASY TO CHANGE AFTER ALL
An unjoyful message and its implications for social programs

A while back there was a severe shortage of electricity in New York City, and Columbia University tried to help out in two ways: A card reading “Save a watt” was placed on everyone’s desk and janitors removed some light bulbs from university corridors. The ways in which this shortage was made up for illustrate two major approaches to social problem solving. One approach is based on the assumption that people can be taught to change their habits, that they can learn to remember to switch off unused lights. The second approach assumes that people need not, or will not, change and instead alter their environment so that, even if they leave light switches on, watts are saved.

The prevalent approach in the treatment of addictions is to impose on the individual a sort of psychological or moral pressure, as if the individual were simply not to do what he does. This may be misleading, or simply ineffective. People who are not ready to change their habits like to think that they can do so only if others impose pressure on them. In fact, the mass media in general have proved to be ineffective as tools for profoundly converting people. Studies have shown that persons are more likely to heed spouses, relatives, friends, and “opinion leaders” than broadsided or printed words when it comes to deep concerns.

Solving social problems by changing people is apparently less productive than accepting people as they are and changing their circumstances instead.

BY AMITAI ETZIONI

$27$ million is used to make nonsmokers out of smokers—that is, to try to change a basic habit—no significant effect is to be expected. Advertising molds or teases our appetites, but it doesn’t change basic tastes, values, or preferences. Try to advertise desegregation to racists, world government to chauvinists, temperance to alcoholics, or—as we still do at the cost of $16 million a year—drug abstention to addicts, and see how far you get.

B = f (p,e)
Effective program …

- Understand phenomenon
  - Well-supported theory
    - Specific to phenomenon
    - Regarding human behavior generally
      - $B = f(p,e)$
  - Replicated empirical findings

Conceptual Soundness → Science, not folklore
Engineering Social Behavior change

\[\text{As } \lim_{S_{act}} \rightarrow \infty | C_E \approx F_E \leq 0 \]

then \( B_k \approx B I_k \ast A_{Bk} \)

where

\( A_{Bk} = S E_k + R_k \)

\( B_k = \text{specific behavior} \)

\( B I_k = \text{intention to engage in behavior} \)

\( A_{Bk} = \text{Agency regarding behavior} \)

\( S E_k = \text{perceived self - efficacy for behavior} \)

\( R_k = \text{perceived responsibility for behavior} \)
<table>
<thead>
<tr>
<th>Individual</th>
<th>Social</th>
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\[
B \approx BI = A_B \times \left( w_1 \sum_{i=1}^{n} B_i E_i + w_2 \sum_{j=1}^{m} NB_j MC_j \right)
\]

*Bi* = beliefs about possible consequences (i) of behavior

*Ei* = evaluation of consequences of behavior

*NBj* = normative beliefs about behavior by person j

*MCj* = motivation to comply with expectations of person j

\[w_1, w_2 = \text{weighting factors for beliefs about act, normative expectations}\]
High visibility enforcement …

\[ B \approx BI = AB \times \left( w_1 \sum_{i=1}^{n} B_i E_i + w_2 \sum_{j=1}^{m} NB_j MC_j \right) \]

- Publicity about enforcement should \( \uparrow B_i \)
  - Where \( i = \) receiving citation (presumably evaluated negatively \( [E_i < 0] \) )

- Should reduce number of teens ignoring GDL restrictions
NC GDL Enforcement Study - Concept

- High Visibility Enforcement model
- Compliance w/GDL requirements
  - Seat belt use
  - Passenger restriction
  - Night driving limit
NC GDL Enforcement Study - Intervention

- Press conferences – media coverage
- Info to parents & teens
  - Licensing offices
  - Schools
  - After school checkpoints
NC GDL Enforcement Study - Evaluation

- Interviews w/ parents & teens
- Observation of young drivers
- Pre-program → Post-program

Results in Goodwin et al. “Encouraging Compliance with Graduated Driver Licensing Restrictions” *Journal of Safety Research* (forthcoming)
Aware of special young driver program - Parents

- Pre-program
  - Guilford (I): 1%
  - Wake (C): 1%

- Post-program
  - Guilford (I): 25%
  - Wake (C): 2%
Aware of special young driver program - Teens

- Pre-program:
  - Guilford (I): 3%
  - Wake (C): 1%

- Post-program:
  - Guilford (I): 19%
  - Wake (C): 4%
Driver seatbelt use

Before

After

Guilford

Wake

p < .01
Any teen passengers

Before After

Guilford
Wake

p < .01
Lessons learned

- Human beings are not very easy to change …
  - Conceptually sound
  - Implemented carefully
    - But not thoroughly enough
  - Minimal effects
- Implications for broad scale use
  - Scaling up to statewide program quite costly
- Opportunity costs!
  - Always consider the cost of forgone opportunities when selecting what to do.
  - Time, effort, $ invested in a program deprive other possibly useful alternatives of those resources.
A Handy Shortcut:

\[ B = f(p,e) \]

Implementation Fidelity

Target Environment (via eng., law, policy) to reach individuals
GDL as example …

- Integrated Program not simply a “Law”
- Conceptually sound
  - Reduces exposure
  - Feasible way to achieve needed practice
  - Provides motivation
- Implementation fidelity
  - Works with little active enforcement
Crash Rate Ratios for 16 & 17 vs. 25-54 year-olds, NC 1991-2003

Effect on 17 yr-olds due to 12 mo. Learner phase

Passenger Restriction
16 year-old Nighttime crashes (9 pm – 5 am)
Multi-Passenger Crashes by Driver Age

Note. Only about 40% of 16 yr-olds and 25% of 17 yr-olds are subject to the passenger restriction.
Time to first crash: GDL drivers better

Cumulative Percentage Crash-Free (Survival)

- Pre-GDL
- GDL

Time Since Licensure

- 1 Day
- 6 Months
- 1 Year
- 2 Years
- 3 Years
- 4 Years
- 5 Years
- 6 Years

Cumulative Percentage Crash-Free (Survival): 100% to 0%
Another promising policy …

- Eliminate early school start times (< 8:30 a.m.)
  - Should reduce drowsy driver crashes
  - Will reduce exposure
    - Of mostly inexperienced drivers
  - Secondary benefits
    - Multiple supporting rationales
- Small studies in NC, TN show crash reductions after county-wide change
Promising “educational” approach …

\[ B \approx BI = AB \ast (\sum_{i=1}^{n} B_i E_i + \sum_{j=1}^{m} NB_j MC_j) \]

**Social Norms**

- Beliefs about how members of a group generally behave (and should behave)
- Perceived Norms influence behavior
  - ...even though we may not be consciously aware of them
Social Norm Interventions

- A broad communication strategy …
- Acquaint population with normative information
- Emphasize positive rather than negative
  - Comprehensive, multi-channel, multi-faceted
  - Use sophisticated marketing/advertising tactics
- Sometimes correct misperceptions …
- Sometimes poorly known fact (about behavior)
Causes of misperception

- Atypical/extreme behavior more easily noticed & remembered
- Media attend to and glamorize
  - Drinking
  - Extreme behaviors
  - Making them seem more common
- Safety community draws attention to problems
  - Unintentionally exaggerating perceived size
What’s the point here? (Everyone smokes, but you shouldn’t)
The point should be:

Practically Nobody Smokes ...

do you really want to be one of the few?

PLEASE DON'T SMOKE!

Illinois Attorney General Jim Ryan & Illinois Association of Park Districts
64% of U of A students have 4 or fewer drinks when they party.

*Based on survey data collected by Campus Health Service (1997) from 270 U of A students in a randomly selected mailing. Funded by the US Dept. of Health & Human Services.
Norm interventions present happy, normal people that target can identify with, associated with factual information documenting desirable normative behavior.
No preaching, no threats, no scare tactics. Message is respectful of target audience rather than condescending or implicitly judgmental.

Students
drink less than you think

UA students average 3 drinks a week*

1 drink =
12 oz. beer = 4-5 oz. wine = 1 oz. liquor

Based on survey data collected by Campus Health Service (2001) from 1220 students in randomly selected classes.

3 drinks

1 drink =
12 oz. beer = 4-5 oz. wine = 1 oz. liquor

Based on survey data collected by Campus Health Service (2001) from 1220 students in randomly selected classes.
REALITY CHECK
EVER HEAR SOMEONE SAY

“Everybody here drinks a lot at parties”

IN REALITY
The majority of HWS seniors drink only 4 or fewer drinks at parties or do not drink at all!

Source: 1996 survey of 440 graduating seniors, Campus Factoids.
REALITY CHECK!

Did you know that

The majority of HWS students drink 2 days or less per week or do not drink at all.

(Source: Campus Factuals)
We’re not Marlboro men.
7 out of 10 Montana teens are tobacco free.

www.MOSTofus.org

A message from The Montana Department of Public Health & Human Services.
MOST Montana young adults (4 out of 5) don’t drink and drive

DESIGNATED DRIVERS SAVE LIVES

MOST of us
www.mostofus.org
Most Montanans (3 out of 4) Wear Seatbelts
Most Montanans (3 out of 4) wear seatbelts.
Most of us in Montana buckle up.
Targeting Parents

Most Parents

When Asked:

“Does your teen call if they are going to be late getting home?”

92% say “Always or usually!”

A Message from the Montana Department of Public Health and Human Services.

Link to Parent Tips at: www.mostofus.org
High School

MOST ETHS STUDENTS CHOOSE NOT TO DRINK ALCOHOL.

72% choose options other than drinking alcohol when hanging out with friends.

High School

United We Stand

Most of Us

4 out of 6

Dekalb & Sycamore Study, DCP/SAFE, (N=1172, 2001)

Haven't used alcohol during the past 30 days

Funded in whole or in part by IDHS and the Center for Substance Abuse Prevention
ETHS students drink non-alcoholic drinks when they hang out with friends.

Funded by the Chicago Community Trust, Rotary Club of Evanston Lighthouse, & Tobacco Settlement Funds.
Remember when
You were his super hero...
You still are!
And he believes the information that you share with him

Share the truth...
Most students don’t drink alcohol
* 73% chose not to be intoxicated during the past 30 days
* 65% chose beverages, other than alcohol, to drink at parties

Research shows that most kids avoid alcohol by:
1. Leaving places where alcohol is being served
2. Just saying “No thanks”
3. Avoiding parties where alcohol might be served

Partnership for a Drug Free America, 1999 and
DeKalb & Sycamore Study, DCP/SAFE, (N=654, 2000)

Funded in whole or in part by IDHS and the Center for Substance Abuse Prevention
Whether it’s Thursday, Friday or Saturday night ... **2 out of 3** UNC students return home with a **.00** B.A.C.

Most of those who drink have 4 or less.

*It’s not what they say, it’s what they blow.*

Results based on breathalyzer data collected between 10:00 pm and 3:00 am during Fall 1999 and Fall 1997 as students returned home to fraternities, sororities, residence halls and apartments.

www.2outof3unc.org
It's not what they say, it's what they blow.

Whether it's Thursday, Friday or Saturday night, 2 out of 3 UNC students return home with a .00 blood alcohol concentration.

Most of those who drink have 4 or less.
Whether it's Thursday, Friday or Saturday night, 2 out of 3 UNC students return home with a .00 blood alcohol concentration.

Most of those who drink have 4 or less.
Whether it’s Thursday, Friday or Saturday night...

2 out of 3 UNC students return home with a .00 blood alcohol content

It’s not what they say, it’s what they blow.

http://ncalcohol.org
UNC Social Norm Program Effects: Heavy Drinking, Night of Interview

1997: 16%
1999: 13%
2002: 11%

28% decrease
Reported vs. Perceived Seatbelt Use - 4 high schools

Always wear seatbelt when riding in a car:

- Myself: 65%
- My best friends: 42%
- Students in my grade: 18%

Clearly the norm for teen belt use (most use them) is misperceived, making this issue ripe for a norm program.
Social Norm approaches highly promising

- But, to succeed they require …
  - Strict adherence to SN principles
  - Intense, long-term effort
  - Commitment of time, $, creativity
Social Norm Programs - step-by-step

- Crucial steps
  - Collect & analyze data
  - Design comprehensive program
  - Develop & test messages
  - Revise messages
  - Continue data collection & evaluation
  - Develop, test, revise new messages
  - Program must continue
National Social Norms Resource Center

http://socialnorm.org
Hobart & William Smith

http://alcohol.hws.edu/

The Social Norms Approach to Preventing School and College Age Substance Abuse

A Handbook for Educators, Counselors, and Clinicians

H. Wesley Perkins

Editor
Social Norm Resources:

www.socialnorms.campushealth.net
MostofUs.org
alcohol.hws.edu/
socialnorm.org
Tried interventions – Proven & promising

- NHTSA “Countermeasures that work”
- NCHRP “Guide for state Transportation Depts”
- Both consider
  - Breadth of use
  - Evidence of effectiveness
  - Conceptual promise
- Only compelling evidence for teen programs:
  - GDL (with exemplary elements given below)
  - Wise (highly publicized) enforcement
### 1. Graduated Driver Licensing

<table>
<thead>
<tr>
<th>Countermeasure</th>
<th>Effectiveness</th>
<th>Use</th>
<th>Cost</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Graduated driver licensing (GDL)</td>
<td>Proven</td>
<td>High</td>
<td>Medium</td>
<td>Long</td>
</tr>
<tr>
<td>1.2 Learner’s permit length, supervised hours</td>
<td>Proven</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>1.3 Provisional - nighttime restrictions</td>
<td>Proven</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>1.4 Provisional - passenger restrictions</td>
<td>Likely</td>
<td>Medium</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>1.5 Provisional - belt use requirements</td>
<td>Uncertain</td>
<td>Unknown</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>1.6 Provisional - cell phone restrictions</td>
<td>Unknown</td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>1.7 Provisional - violation penalties</td>
<td>Uncertain</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
</tr>
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### 2. Driver education

<table>
<thead>
<tr>
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<th>Effectiveness</th>
<th>Use</th>
<th>Cost</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Prelicensure driver education</td>
<td>None</td>
<td>Unknown</td>
<td>High</td>
<td>Long</td>
</tr>
<tr>
<td>2.2 Postlicensure or advanced driver ed</td>
<td>Unknown</td>
<td>Low</td>
<td>High</td>
<td>Long</td>
</tr>
</tbody>
</table>

### 3. Parents

<table>
<thead>
<tr>
<th>Countermeasure</th>
<th>Effectiveness</th>
<th>Use</th>
<th>Cost</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Parent roles in teaching and managing</td>
<td>Varies</td>
<td>Medium</td>
<td>Low</td>
<td>Short</td>
</tr>
</tbody>
</table>

### 4. Traffic law enforcement

<table>
<thead>
<tr>
<th>Countermeasure</th>
<th>Effectiveness</th>
<th>Use</th>
<th>Cost</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 Enforcement of GDL and zero-tolerance</td>
<td>Likely</td>
<td>Unknown</td>
<td>Medium</td>
<td>Short</td>
</tr>
</tbody>
</table>
Forthcoming Guide to Reducing Young Driver Collisions:
NCHRP Young Driver Guide (Goodwin et al., 2007)

- **GDL**
  - Learner permit ($\geq 6$ mo.)
  - Night restriction (9 p.m. – 5 a.m.)
  - Passenger restriction ($\leq 1$)
  - Cell phone restriction

- **Improve Parental Involvement**
  - Supervision/Management/vehicle selection

- **Publicize enforcement of seatbelt, alcohol, GDL**

- **Eliminate early school start times**

- **Enhance content & delivery of driver education/training** (but unclear what is needed)
Often tried – too simplistic

- “Messages” (Facts, admonitions)
  - Slogans, PSAs
- Advice for parents (promising, but we don’t yet know what to tell them to do, or how to most effectively to tell them)
- Increasing punishment
- Emergency skills training (no benefits, negative effects instead)
- Augmenting Driver Education (With trivial changes like adding a topic to existing curriculum)
  - Again, nobody yet knows what D.E. should entail, though there are plenty of opinions
Guidance for parents

- NC & TN studies
  - “Novice Driver’s Road Map”
  - Conceptually simplistic
  - Parents like it
  - Many didn’t use it
    - Most didn’t use as intended
  - No effect on parent behavior
Guidance for parents

- “Checkpoints” program
- MD & CT
- Conceptually Sophisticated
- Some success improving parental behavior
- Parental adherence less than ideal
- Effect on teens crashes not yet clear
Ineffective Messaging