

# ParentsEmpowered.org and the Utah Underage Drinking Prevention Workgroup

---

## Responses to Frequently Asked Questions

Underage drinking is one of the most serious problems we face in this state, for it can cause brain impairment, increased risk of addiction, and lead to anti-social behavior. The State's Underage Drinking Prevention Workgroup, which operates under USAAV (Utah Substance Abuse and Anti-Violence Coordinating Council) seeks to encourage and empower parents to make a positive difference in their children's lives to help them stay alcohol free. Because there is some discussion currently in the U.S. about lowering the drinking age, and we have received requests for more information, we are providing it in the form of "Frequently Asked Questions."

**QUESTION #1:** What documented research did ParentsEmpowered use for their campaign?

**RESPONSE:** The addiction and alcohol-brain impairment facts on our ParentsEmpowered.org website came from respected independent scientific researchers (see references). Most of it came through the National Academy of Science, a private, nonprofit society of distinguished scientists and scholars engaged in scientific research, who carefully reviewed all the research studies on alcohol and human brain development (not simply studies on the effects of alcohol on rat brains). They presented their findings on underage drinking to Congress in 2002. Before presenting their 300 page report (which is now in book form, "Reducing Underage Drinking – A Collective Responsibility," available from the NAS on the web), the report was independently reviewed by the Report Review Committee of the National Research Council "to ascertain that their report was sound and to ensure that it met institutional standards for objectivity and evidence" ("Reducing Underage Drinking – A Collective Responsibility," pp. iii-viii). We have included excerpts from their report below for easy viewing. All the following quotations in paragraphs ending with *(NAS report)* came from studies listed in their report.

- "Youth who begin drinking before age 15 are four times more likely to develop alcohol dependence than those who begin drinking at or after age 21" (Grant and Dawson, 1997) *(NAS report)*.
- "Among adults who developed alcoholism, the average age of first drink was 13" (Schuckit, Anthenelli, Bucholz, Hesselbrock, and Tipp, 1995) *(NAS report)*.
- The brain imaging studies on our website which were done by Dr. Susan Tapert, a researcher and professor of psychiatry at the University of California, San Diego, "involved teens recruited from local schools. They are typically weekend binge drinkers, consuming about 40 drinks per month on average, and they were not recruited from treatment or rehab programs" (personal correspondence with Dr. Tapert, 2007).

- The S.P.E.C.T. brain imaging studies showing decreased functional brain activity levels in teens who regularly consume alcohol were performed on sober young people by Dr. Daniel Amen, a respected neuroscientist and psychiatrist in private practice in Southern California. They are used with his permission and are published on his website, [amenclinic.com](http://amenclinic.com).

**QUESTION #2:** Did ParentsEmpowered.org use research done on rat—not human—teen brains?

**RESPONSE:** Because the brains of rats and humans possess similar addiction pathways, early research on alcoholism and the effects of alcohol on the brain involved rats. When it was discovered that alcohol affected teen rat brains much differently than adult rats, research was then directed to that area of focus. This was followed by research on humans, including MRIs and fMRIs (functional MRIs), into how alcohol affects a human teen brain, which corroborated the animal research.<sup>1</sup> The alcohol-brain impairment facts presented on our ParentsEmpowered.org website concern human teen brains.

**QUESTION #3:** Is there proof that underage drinking can cause brain impairment?

**RESPONSE:** It is a well-accepted fact that the brain goes through dramatic change and refinement during the ages of 10-25 (Huttenlocher, 1979; Geidd et al., 1999; Silveri and Spear, 2002). Alcohol is a depressant and affects a teen developing brain differently than a mature adult brain. Early and heavy alcohol use has been shown to negatively affect teen brain development. Alcohol use can cause the brains of teen drinkers to respond more positively to alcohol images and cues than non-drinking teens.

- “It has recently become clear that there is a tremendous amount of brain development taking place during adolescence. . . . Alcohol, and perhaps other drugs, affect both behavior and brain function differently in adolescents than adults, and adolescents may be more vulnerable to the long-term effects of alcohol abuse.” (White, Duke University) (*NAS report*).
- “Adolescent brain developments are prominent in the prefrontal cortex, an area critical for considering the consequences of actions, and other frontal areas that are important for stress responses and managing drives (Spear, 2002) (*NAS report*).
- “Brain size was compared between youth with adolescent-onset alcohol use disorders and healthy matched comparison youth using magnetic resonance imaging (MRI). Youth with alcohol use disorders had significantly smaller left and right hippocampi, central brain regions critical for the formation of new memories” (De Bellis et al., 2000) (*NAS report*).
- Researcher Aaron White at Duke University describes in his website how alcohol negatively affects the formation of long-term memories in the hippocampus, noting that alcohol “severely disrupts brain cells’ ability to establish long-lasting,

heightened responsiveness to signals from other cells (Bliss and Collinridge 1993).”<sup>2</sup>

- “Although some studies have found that [drinking teens] perform reasonably well on tests of language, intellect, and reasoning, other studies have found that young heavy drinkers perform more poorly on tests of planning and executive functioning (Giancola and Mezzich, 2000), memory (Brown et al., 2000a), spatial operations (Tapert and Brown, 1999; Tapert et al., 2002), and attention tasks” (Tapert et al., 2001a; Tapert and Brown, 1999) (*NAS report*).
- “In one study, alcohol-use disordered adolescents who were detoxified in a long-term treatment program demonstrated a 10 percent deficit in their ability to recall both verbal and nonverbal information that had been previously presented to them” (Brown et al., 2000a) (*NAS report*).
- “A large college survey reported that youth with grade point averages at the D or F level drink three times as much as those who earn A grades” (Presley, Meilman, and Lyerla, 1994) (*NAS report*).
- “For youth being treated for alcohol problems, those who continue to drink and those who experience any alcohol withdrawal appear most likely to exhibit continued deterioration in cognitive functioning” (Tapert and Brown, 1999; Tapert et al., 2002) (*NAS report*).
- In a study comparing (1) individuals who were treated at inpatient rehab programs during adolescence then relapsed to (2) those who had successful treatment outcomes, and to (3) individuals with no history of substance problems, those who continued to use alcohol and drugs heavily performed progressively more poorly than those who stopped use and those with no history of substance problems. There was some evidence for continued modestly poorer performance in those who stopped using, as compared to non-problem users” (personal correspondence, Tapert, 2007).
- “Tapert and colleagues (2002) assessed neuropsychological functioning and substance use involvement at seven time points during an eight year period in subjects beginning, on average, at the age of 16 and ending at 24.... The heavier one was involved in substance use during adolescence, the lower their scores on tests of learning and memory at year eight, when subjects were in their early twenties. Heavier drinking alone was associated with lower scores on tests of attention, and experiencing withdrawal symptoms from alcohol predicted additional deficits in visuospatial abilities. These studies suggest that heavy use of alcohol and other drugs during the teenage years predicts lower scores on test of memory and attention when one is in their early-mid twenties.” (White, Duke University)
- “A study with alcohol-dependent young women showed that alcohol-related cues (e.g., words associated with drinking) elicited craving and led to greater increases in brain activity in a variety of regions relative to controls (Tapert et al., 2004), thus establishing a link between craving for alcohol and brain function in

key areas and indicating that the brains of alcohol-dependent young women function differently than their peers." (White, Duke University).

**QUESTION #4:** Can drinking underage "trash" a teen's brain?

**RESPONSE:** While the word "trash" was used figuratively, as a play-on-words in wrapping Salt Lake City and County garbage trucks, our use of the term "brain impairment" is accurate, for it refers not only to cognitive impairment, but also to the increased risk of addiction (which is a mal-adaptation of the brain's pleasure-reward system to alcohol), as well as to the increased risk of mental health problems among teens who use alcohol.

- "Teen alcohol use is associated with a wide variety of mental health concerns, ranging from low self-esteem and deviant behaviors to depression and suicide. Mental health problems and disorders occur significantly more frequently among youth with alcohol use disorders than in the general population and substantially more often than can be accounted for by the base rates of these individual disorders" (Lilienfeld, Waldman, and Isreal, 1994).
- "Early [alcohol] use also elevates risk for a multitude of mental health and social problems" (McGee, Williams, Poulton, and Moffitt, 2000).
- "Studies indicate that heavy adolescent alcohol use is associated with psychological distress, anxiety, and depression" (Mazaira Castro, Dominguez Santos, and Rodriguez Lopez, 1993).
- In a survey of high school students binge drinking was a key predictor of actual suicide attempts, compared to suicidal thoughts, even after factoring in high levels of depression and stress. Michael Windle, Ph.D., lead author of the study, said binge drinking may be a good predictor "because binge drinking episodes frequently precede serious suicide attempts." (Alcoholism: Clinical and Experimental Research, May, 2004; read summary of article at [Join Together, www.jointogether.org/news/research/summaries/2004/study-binge-drinking-a-of.html](http://www.jointogether.org/news/research/summaries/2004/study-binge-drinking-a-of.html))
- "Suicide is the third leading cause of death for youth (National Center for Health Statistics, 1999) and is consistently related to alcohol use across studies" (e.g., Preuss et al., 2002).
- "Alcohol use interacts with conditions such as depression and stress to contribute to suicide, the third leading cause of death among people between the ages of 14 and 25." (Anderson, 2001; Garlow, 2002).
- In one study, 37% of 8<sup>th</sup> grade females who drank heavily reported attempting suicide, compared with 11 percent who did not drink (Windle, Miller-Tutzauer, Domenico).

- “Rates of conduct disorder, antisocial personality disorder, nicotine dependence, and illicit drug abuse and dependence are significantly higher among youth who drink early” (McGue, Iacona, Legrand, Malone, and Elkins, 2001).

**QUESTION #5:** Can failure to drink before age 21 cause problems later in life?

**RESPONSE:** For youth to mature into successful adults, they need to be emotionally stable and become successful in areas essential for their roles as adults, such as school, work, and interpersonal relationships. There is substantial evidence that alcohol abuse and dependence creates problems in these areas; but even modest involvement during high school may create significant problems. Because teen drinking impairs good judgment, and most teens have not yet developed the brain mechanism that makes them sedated during heavy drinking, they are less likely to pass-out than adults who have drunk the same number of drinks, permitting teens to continue engaging in risky or harmful behaviors in which they might not otherwise participate.

- In a well-designed national survey, Monitoring the Future 2003 (MTF), “53 percent of twelfth graders had consumed alcohol on at least 10 occasions and two-thirds of these youth indicated they had one or more problems because of their drinking.
  - “One-third of the high school seniors with drinking experience reported 3 or more alcohol-related problems. The most commonly reported alcohol-related problems included behavior they later regretted (52 percent) and interference with the ability to think clearly (30 percent).
  - “One in five students reported damage to their relationship with their significant other and/or driving unsafely.
  - “One of every six students indicated they became involved with people who were a bad influence on them and damaged their relationship with their parents.
  - “10 percent of high school seniors with alcohol experience said alcohol damaged friendships, hurt them emotionally, got them in trouble with police, and hurt their performance in school.” (O’Malley, Johnston, and Bachman, 1998) (*NAS report*).
- “Youth who use alcohol are at an increased risk for other drug involvement, failure to develop emotionally and cognitively, and criminal involvement” (Newcomb and Bentler, 1988) (*NAS report*).
- “Alcohol use also influences the mental health and social functioning of teens. Youth drinking is associated with nicotine and marijuana use, fighting, early intercourse, school dropout, and suicidal ideation/attempts” (National Center for Health Statistics, 1999; Preuss et al., 2002) (*NAS report*).

- In a new study published in the *Journal of Epidemiology and Community Health*, the U.K.'s Institute of Child Health reported a study of 11,000 children which compared the drinking habits of 16-year-olds in 1986 to a variety of outcomes when they hit age 30. Those classified as binge drinkers in their teens were:
  - 60% more likely to become alcoholics by age 30
  - 40% more likely to use illegal drugs and have mental health problems
  - 60% more likely to be homeless and ran almost double the risk for criminal convictions
  - 40 percent more likely to have suffered serious accidents.

Adjusting for other factors likely to influence findings, the results remained unchanged.<sup>3</sup>

- "Youth who drink heavily are three times less likely to use condoms than nondrinkers or infrequent drinkers (Tapert, Aarons, Sedlar, and Brown, 2001b), and heavy drinking is associated with unprotected intercourse and sexual activity before age 16 (Fergusson and Lynskey, 1996). Forty-four percent of sexually active teenagers report they are more likely to have intercourse if they have been drinking" (Strunin and Hingson, 1992).
- "Youth with alcohol use disorders are twice as likely to have a sexually transmitted disease" (Tapert et al., 2001b) (*NAS report*).
- "Girls with alcohol problems are three times more likely to have a pregnancy before age 18" (Tapert et al., 2001b) (*NAS report*).
- Unprotected sex during drinking can cause problems for more than just the teen drinker. Jacobson et al reported that "children whose mothers reported drinking during the time of conception are at greater risk from pre-natal alcohol exposure" (Jacobson et al 2004) (*NAS report*).
- "Studies show that youth who increase heavy drinking from ages 18 to 24 and consistently drink heavily at least weekly may have problems successfully managing the transition from adolescence to young adulthood, and may fail to complete goals regarding marriage, education, employment, and financial independence" (Schulenberg, O'Malley, Bachman, Wadsworth, and Johnston, 1996) (*NAS report*).
- Scott F. Stoltenberg, assistant research scientist at the Department of Psychiatry, University of Michigan Alcohol Research Center, stated, "A lot of studies have shown that the earlier people start to drink regularly, the more likely it is that they will eventually develop alcohol problems. So if you can put off a person's initiation into regular drinking into their 20s or so, they're a lot less likely to develop

these kinds of problems. . . . Early-onset alcoholism is one of the defining features of anti-social alcoholism. Generally these are the people that . . . get arrested, they drive while drunk; generally they're thought to be very impulsive. 'Impulsivity,' or the lack of impulse control, has a lot to do with whether or not a person can keep themselves from doing whatever comes into their head. In other words, anti-social behavior involves a range of behaviors that tend to get people into trouble; early-onset alcoholism facilitates anti-social behavior in those individuals who already have impulse-control problems, most likely by further weakening impulse control."

**QUESTION #6:** Do those who begin drinking after age 21 have more alcohol related problems as adults than those who drank as teens?

**RESPONSE:** A small number of young adults who begin drinking in their 20s are a type of late-onset alcoholic due to genetic vulnerabilities. While they didn't drink in their teens due to religious or family values, in their early 20's they experienced increased stress due to work or social pressures, and they began self-medicating with alcohol to reduce their over-reaction to stressors. Some end up with alcohol problems. Dr. Mark Schuckit at the University of California San Diego tested the brain waves of these types of college students as well as those who were children of Type II Alcoholics (early onset). He found that their brain waves (autonomic nervous system, emotional lability, stress reactions, etc.) over-reacted to stress. When he administered alcohol to the students, the brain waves smoothed out to more alpha and theta waves as well as calming their heart rate, galvanic skin response (GSR), etc. The students reported they had never felt so normal. Thus, they appear to be self-medicating as an overreaction to stressors. Genetic researchers have identified about 5 genes for alcoholism and several (particularly the SLC6-A4 gene) are related to this overreaction to stressors. Because of genetic vulnerability to alcohol, they need to learn to manage their over-reactivity with more healthy stress management techniques. For youth who are at high risk for alcoholism for genetic and family environmental reasons (such as parental alcohol misuse or children of Type 2 alcoholics), abstinence may be the best way to avoid becoming an alcoholic. (Kumpfer, 1987, for NIDA)

**QUESTION #7:** Did a 2004 study show that the best way to teach people to drink responsibly is for parents to provide alcohol and drink with them in their teens?

**RESPONSE:** Studies have shown that the best way to teach kids to drink responsibly is to insist on, and monitor, that there is no drinking before age 21; and then, if they choose to use alcohol after age 21, to drink only in moderation, which is defined as no more than one drink a day for females and two for males. Allowing teens to consume alcohol may actually harm family relationships (see below). The 2004 study in question (Foley, et al, published in the *Journal of Adolescent Health* Vol. 34 No.5) has been mis-used by some to lead others to a faulty underage pro-drinking conclusion. The study was actually designed to evaluate the importance of adults' approval attitudes of alcohol use by teens who were already drinking. Because, as the authors pointed out, parental disapproval had already been well-established to deter underage drinking, they did not question non-drinking teens to ascertain their parents' attitudes. While the study did show that a very small percentage (14%) of parents who drank with a teen in a family setting did have teens who didn't abuse alcohol (but who did, however, still

consume alcohol), the study authors neglected to question the context of the event: Was it provided for a special celebration or occasion or during a meal, and did parents set limits on alcohol use? Therefore, the act of consuming alcohol with a teen could not be deemed a causative preventive measure. Further, drinking with a teen inherently teaches disregard for the law, which is socially irresponsible behavior. Following are actual quotes from the 2004 study :

- "Protective parental attitudes ('My mother doesn't want me to drink alcohol') generally deter alcohol use among youth."
- "The perception that parents would punish the adolescent if caught drinking protected the youth from drinking.... Although talking with a child about drinking may be beneficial, it is not as effective at reducing regular drinking behavior as the child perceiving more severe consequences."
- "Providing alcohol to an adolescent explicitly indicates approval of underage alcohol use; disregarding alcohol use may lead to future substance use or abuse."
- "Children who consume alcohol at home have been shown to drink with greater frequency."
- "Easy alcohol access in the home increased drinking among teenagers."
- "Parents providing alcohol for a party significantly increased the likelihood of regular and binge drinking and was the strongest predictor of alcohol use and misuse.... Providing alcohol at a party was associated with a two-fold increase in past 30 day use and binge drinking.... Providing alcohol appears to have a unique and detrimental effect on underage drinking behavior."
- "One in five teens reported that s/he drank alcohol at a party that was provided by a parent or a friend's parent. Beck et al found that parents who investigate the presence of other parents at parties are less likely to have an adolescent who drinks. Such active monitoring may reduce alcohol use and will lessen the opportunity for misuse."
- "Youth who reported that they received alcohol from a non-relative adult with permission reported significantly higher levels of consumption and recent alcohol use."
- "Youth with heavy alcohol involvement experience less expressiveness and cohesion in their families. Alcohol abusing youth less often identify parents as important supports and develop support networks with more drinking peers" (Tapert, Tate, and Brown, 1999) (*NAS report*).
- Underage drinking "leads to more disruptive disorders with conduct problems and aggressive or oppositional behaviors" (Rose, 1998; Costello et al., 1999) (*NAS report*).

- “The evidence is mounting that religiosity, via attendance at religious services or the perceived importance of religion, protects adolescents from alcohol use and may be one of the most important protective mechanisms for underage drinking.”

**QUESTION #8:** Do European teens who drink before age 18 consume less alcohol and have fewer episodes of problem-drinking than U.S. teens?

**REAPONSE:** The myth that in European countries young people are protected from binge drinking and alcoholism by learning to consume alcohol responsibly within the environment of the family is not supported by fact. The drinking rates and alcohol-related problems are higher among almost all European Countries than the U.S. In comparing data from the 2003 European School Survey Project on Alcohol and Other Drugs (ESPAD) and the 2003 United States Monitoring the Future Survey (MTF) we find that youth “Prevalence of Drinking,” “Heavy Drinking,” “Prevalence of Intoxication” and “Problem Drinking” in many European countries is almost double that of the United States ([www.udetc.org/documents/CompareDrinkRate.pdf](http://www.udetc.org/documents/CompareDrinkRate.pdf)).

- A greater percentage of young people from nearly all European countries report higher drinking levels than U.S. teens. Only Turkey, a largely Islamic state, scored lower.
- Prevalence of Heavy Drinking in the UK was 54% vs 22% for the U.S.
- Prevalence of Intoxication in the Past 30 days in the U.K was 46% vs 18% in the U.S.
- In an August 2007 special report on underage drinking and the increase in child alcoholism in England, *The Independent*, a British newspaper, stated, “Britain’s booze culture is putting more children into the hospital with drink-related problems than ever before.”<sup>4</sup>
  - Professor Mark Bellis, director for the Centre for Public Health at Liverpool John Moores University stated, “In a recent survey of 10,000 15-to-16 year olds, 90 percent drank and nearly 40 percent of these usually binged on alcohol.”<sup>5</sup>
- According to a British on-line journal, in the last decade, the number of cases of alcohol related cirrhosis of the liver in the UK has more than doubled among young people aged 25-34.<sup>6</sup>
- The U.S overall strategy of zero tolerance and minimum age of 21 is clearly more effective than the liberal polices in the U.K.

**QUESTION #9:** Is the age 21 drinking law necessary or helpful?

**RESPONSE:** The mandatory 21 drinking law is one of the most effective public safety laws ever passed and saves almost 1000 lives each year. It has been examined 49 well-documented studies and found very effective. Note the following:

- After the repeal of prohibition, most states had a minimum drinking age of 21. During the Vietnam War, 29 states lowered their drinking ages to correspond with the draft age; but all experienced negative consequences. As a result, by 1983 sixteen states voluntarily raised their drinking age back to 21, with an immediate decrease in drunk driving fatalities.
- In 1984 President Reagan signed the Uniform Drinking Age of 21 into law; and by 1988 all states complied. The National Highway Traffic Safety Administration (NHTSA) found: "MLDA 21 laws clearly reduced youth drinking and driving. They appear to have done so both by reducing youth drinking directly and by encouraging youth to separate their drinking from their driving."
- Click onto [Why21.org](http://Why21.org) for more convincing facts and information on this subject.

**QUESTION #10:** Was the Utah Underage Drinking Prevention Workgroup manipulated into action by the right-wing Bush administration, and is it prohibitionist?

**RESPONSE:** The federal initiative (Public Law 105-119) that focused on youth alcohol use and provided state incentive and funding to prevent it was passed in 1998 during the Clinton Administration. The *Leadership to Keep Children Alcohol Free* was founded by The National Institute on Alcohol Abuse and Alcoholism and The Robert Wood Johnson Foundation in 1999 before Bush became President. All Governor's spouses are invited to be a part of it; and most—Democrats and Republicans—join. Spouses of Governors Leavitt and Walker, although ardent Bush supporters, did not, demonstrating clearly that it was not Bush-driven. The 2006 S.T.O.P. Act, which deals with underage drinking, was a bi-partisan bill. The Surgeon General's "Call to Action" was the result of a thoughtful review of the preponderance of research—only a portion of which is presented here—not political pressure. There has actually been continual erosion in funding for youth alcohol research and Safe and Drug-Free Schools funding under the Bush Administration.

**FACT:** Utah became concerned after the American Medical Association published teen alcohol brain-damage research from the National Academies of Science report to Congress. Our concern was heightened as people, such as the President of MADD-Utah, spoke periodically to the many addicted youth in 3<sup>rd</sup>. District Court and brought their plight to public attention saying, "We can no longer look into the hopeless faces of addicted youth and do nothing." The staggering costs of human suffering, loss of valuable potential, and enormous costs to society would not allow us to remain idle. When we realized that most Utahans arrested for DUI's first drank underage, we had 18,000 addicted youth in Utah and only 3500 treatment slots, and that many of these kids would end up in the criminal justice system or on welfare if nothing were done, we decided to take action.

**FACT:** When Utah was asked, as were all 50 states, to send a delegation to Washington to meet with the Department of Health and Human Services to find solutions to the national crisis of underage drinking, a team of dedicated specialists, who had already been working together for a year to craft the EASY legislation (Eliminate Alcohol Sales to Youth), was sent. It was composed of drinkers and non-drinkers, liberals and

conservatives, substance abuse professionals and social activists who saw the problem as a health and safety issue—not a moral issue. No one on the Underage Drinking Prevention Workgroup is prohibitionist.

- We were asked, like all the other 50 states, to hold Town Hall meetings throughout the State to alert the public to the crisis of underage drinking. The fact that we held more than any other state was due to our competence and professionalism, not to right-wing conservatism.
- So as not to give the impression that we are advocating raising the drinking age or suggesting prohibition, we purposely used the legal drinking age of 21 as the benchmark of completed brain development in our campaign, while research clearly shows that the brain is really not fully developed until about age 25.
  - “Recent evidence suggests that people in their early twenties are actually more vulnerable to alcohol-induced memory impairments than those in their late twenties (Acheson et al., 1999). . . . In a study subjects were shown a figure. . . and were asked to recreate it both immediately after seeing it and twenty minutes later. Alcohol impaired performance more in subjects between 21-24 years of age than in subjects 25-29 years of age. . . . When tested under placebo, all subjects performed similarly in both the immediate and delayed components of the task. However, when tested under alcohol (the equivalent of about 2-3 drinks), subjects in their early twenties performed worse than subjects in their late twenties on both components of the task.”<sup>7</sup>
  - Some conservative parents have even complained that we are tacitly advocating drinking by telling parents to teach their children not to drink before age 21.

FACT: Our charge at the conference in Washington was to use the information and recommendations from the National Academies of Science report to Congress to mobilize and find solutions. Our approach has been measured and responsible. We have followed precisely the recommendations of the NAS, integrating them into what we were already doing; and we have sought for and insisted on research-based solutions.

- Our ad campaign targets parents of 10-16 year olds because research shows: a) if you target kids with an anti-drinking message, use can go up; b) kids are now drinking earlier in Utah; and c) parental disapproval is the number one reason kids choose not to drink.
- We are providing parental skills that will help parents teach their children to be responsible, competent adults and remain alcohol-free until age 21, which is the law.
- These skills involve family bonding, setting boundaries (which includes delaying gratification and conforming to the law), and monitoring their children’s activities.

- Our Legislators and Mayors became convinced of the need to help prevent underage drinking after reviewing corroborated teen alcohol brain-damage research and viewing, with their own eyes, the MRI and SPECT scans of brain impairment caused by underage drinking on human (not rat) teen brains. (These videos are: "The Truth About Drinking" – from [AimsMultimedia.com](http://AimsMultimedia.com), and "Don't Drain Your Brain, - from [hrmvideo.com](http://hrmvideo.com)).

CONCLUSION: For the thoughtful and unbiased observer, the studies cited here provide ample evidence that underage drinking, especially heavy teen drinking, can impair a teen's developing brain. Studies show that most addiction typically begins in adolescence. The Utah Underage Drinking Prevention Workgroup's media campaign, while seeking to present ideas in creative, attention-grabbing ways, such as a play-on-words to put a point across, is based on reliable scientific research. Our goal is to have the young people of this State grow up alcohol and addiction-free, with a whole range of healthy choices and possibilities ahead of them. We have taken a responsible, reasoned approach to solving the difficult and complex problem of underage drinking in Utah. To achieve our goal, we need the support of the whole community, in a Total Community Mobilization. That way, everybody benefits. We invite all concerned citizens to join us in this important effort to keep our kids alcohol free.

---

## REFERENCES:

Anderson RN. *Deaths: Leading causes for 1999*. Atlanta, GA: National Center for Health Statistics, National Vital Statistics System, Centers for Disease Control and Prevention; October 12, 2001.

Brown, S.A., Gleghorn, A.A., Schuckit, M.A., Myers, M.G., and Mott, M.A. (1996). Conduct disorder among adolescent alcohol and drug abusers. *Journal of Studies on Alcohol*, 57(3), 314-324.

Brown, S.A., Tapert, S.F., Granholm, E., and Delis, D.C. (2000a). Neurocognitive functioning of adolescents: Effects of protracted alcohol use. *Alcoholism: Clinical and Experimental Research*, 24(2), 164-171.

Brown, S.A., Tapert, S.F., Tate, S.R., and Abrantes, A.M. (2000b). The role of alcohol in adolescent relapse and outcome. *Journal of Psychoactive Drugs*, 32, 107-115.

De Bellis, M.D., Clark, D.B., Beers, S.R., Soloff, P.H., Boring, A.M., Hall, J., Kersh, A., and Keshavan, M.S. (2000). Hippocampal volume in adolescent-onset alcohol use disorders. *American Journal of Psychiatry*, 157(5), 737-744.

Foley, KL, Altman D, Durant R, Wolfson, M (2004) Adults' Approval and Adolescents' Alcohol Use. *Journal of Adolescent Health*, 34-345, e17.

Garlow SJ. Age, gender and ethnicity differences in patterns of cocaine and ethanol use preceding suicide. *Am J Psychiat.* 2002; 159(4):615-619.

Giancola, P.R., and Mezzich, A.C. (2000). Neuropsychological deficits in female adolescents with a substance use disorder: Better accounted for by conduct disorder? *Journal of Studies on Alcohol*, 61(6), 809-817.

Grant, B.F., and Dawson, D.A. (1997). Age at onset of alcohol use and its association with DSM-IV alcohol abuse and dependence: Results from the National Longitudinal Alcohol Epidemiologic Survey. *Journal of Substance Abuse*, 9, 103-110.

Hansell, S., White, H.R., and Vali, F.M. (1999). Specific alcoholic beverages and physical and mental health among adolescents. *Journal of Studies on Alcohol*, 2, 209-218.

Jacobson, S.W., Jacobson, J.L., Sokol, R.J., Chiodo, L.M. & Corobana, R. 2004. Maternal Age, Alcohol Abuse History, and Quality of Parenting as Moderators of the Effects of Prenatal Alcohol Exposure on 7.5-Year Intellectual Function. *Alcoholism: Clinical & Experimental Research*, 28(11), 1732-1745.

Kumpfer, K. L. 1987. Special populations: Etiology and prevention of vulnerability to chemical dependency in children of substance abusers. In B. S. Brown and A. R. Mills (eds.), *Youth at High Risk of Substance Abuse*. Rockville, MD: National Institute on Drug Abuse.

Lilienfeld, S.O., Waldman, I.D., and Israel, A.C. (1994). A critical examination of the use of the term and concept of comorbidity in psychopathology research. *Clinical Psychology- Science and Practice*, 1(1), 71-83

Mazaira Castro, J.A., Dominquez Santos, M.D., and Rodriguez Lopez, A. (1993). Alcohol consumption and its relationship with the presence of minor psychiatric pathology in Galicia's adolescent population. *Psiquitria Infanto-Juvenil*, 1, 35-41.

McGee, R., Williams, S., Poulton, R., and Moffitt, T. (2000). A longitudinal study of cannabis use and mental health from adolescence to early adulthood. *Addiction*, 4, 491- 503.

McGue, M., Iacono, W.G., Legrand, L.N., Malone, S., and Elkins, I. (2001). Origins and consequences of age at first drink: Associations with substance-use disorders, disinhibitory behavior and psychopathology, and P3 amplitude. *Alcoholism: Clinical and Experimental Research*, 8, 1156-1165.

National Academies Committee on Developing a Strategy to Reduce and Prevent Underage Drinking, Bonnie, Richard, and Mary Ellen O'Connell, eds. Reducing Underage Drinking – A Collective Responsibility. Washington D.C.: The National Academies Press, 2004.

Nixon, K. & Crews, F.T. 2004. Temporally Specific Burst in Cell Proliferation Increases Hippocampal Neurogenesis in Protracted Abstinence from Alcohol. *Journal of Neuroscience*, 24, 9714-9722.

O'Malley, P.M., Johnston, L.D., and Bachman, J.G. (1998). Alcohol use among adolescents. *Alcohol Health and Research World*, 22(2), 85-93.

Newcomb, M.D., and Bentler, P.M. (1988). *Consequences of adolescent drug use: Impact on the lives of young adults*. Newbury Park, CA: Sage.

Presley, C.A., Meilman, P.W., and Lyster, R. (1994). Development of the Core Alcohol and Drug Survey: Initial findings and future directions. *Journal of American College Health*, 42(6), 248-255.

Preuss, U.W., Schuckit, M.A., Smith, T.L., Danko, G.P., Buckman, K., Bierut, L., Bucholz, K.K., Hesselbrock, M.N., Hesselbrock, V.M., and Reich, T. (2002). Comparison of 3190 alcohol-dependent individuals with and without suicide attempts. *Alcoholism: Clinical and Experimental Research*, 26(4), 471-477.

Rose, R.J. (1998). A developmental behavior-genetic perspective on alcoholism risk. *Alcohol Health and Research World*, 22(2), 131-143.

Schuckit, M.A., Anthenelli, R.M., Bucholz, K.K., Hesselbrock, V.M., and Tipp, J. (1995). The time course of development of alcohol-related problems in men and women. *Journal of Studies on Alcohol*, 56(2), 218-225.

Schuckit, M.A., Irwin, M., and Brown, S.A. (1990). The history of anxiety symptoms among 171 primary alcoholics. *Journal of Studies on Alcohol*, 51(1), 34-41.

Schulenberg, J., O'Malley, P.M., Bachman, J.G., Wadsworth, K.N., and Johnston, L.D. (1996). Getting drunk and growing up: Trajectories of frequent binge drinking during the transition to young adulthood. *Journal of Studies on Alcohol*, 57(3), 289-304.

(Stoltenberg, S.F., Hill, E.M., Mudd, S.A., Blow, F.C., & Zucker, R.A. (1999, December). Birth cohort differences in features of antisocial alcoholism among men and women. *Alcoholism: Clinical and Experimental Research*, 23(12), 1884.)

Spear, L.P. (2002). The adolescent brain and the college drinker: Biological basis of propensity to use and misuse alcohol. *Journal of Studies on Alcohol (Suppl. 14)*, 71-81.

Tapert, S., Brown, G., Meloy, M., Dager, A., Cheung, E., and Brown, S. (2001a). fMRI measurement of brain function in alcohol use disordered adolescents. *Alcoholism: Clinical and Experimental Research*, 25, 80A.

Tapert, S.F., Aarons, G.A., Sedlar, G., and Brown, S.A. (2001b). Adolescent substance use and sexual risk taking behavior. *Journal of Adolescent Health*, 28, 181-189.

Tapert, S.F., and Brown, S.A. (1999). Neuropsychological correlates of adolescent substance abuse: Four-year outcomes. *Journal of the International Neuropsychological Society*, 5, 481-493.

Tapert, S.F., and Brown, S.A. (2000). Substance dependence, family history of alcohol dependence, and neuropsychological functioning in adolescence. *Addictions*, 95(7), 1043-1053.

Tapert, S.F., Granholm, E., Leedy, N., and Brown, S.A. (2002). Substance use and withdrawal: Neuropsychological functioning over 8 years in youth. *Journal of the International Neuropsychological Society*, 8, 873-883.

White, Aaron, <http://www.duke.edu/~amwhite/Adolescence/adolescent3.html>

White, Aaron, <http://www.duke.edu/~amwhite/Blackouts/blackouts15.html>

Windle M, Miller-Tutzauer C, Domenico D. Alcohol use, suicidal behavior, and risky activities among adolescents. *Journal of Research on Adolescence*. 1992;2(4):317-330.

#### ENDNOTES:

---

<sup>1</sup> Reducing Underage Drinking – A Collective Responsibility, p. 65

<sup>2</sup> White, Aaron, <http://www.duke.edu/~amwhite/Adolescence/adolescent5.html>

<sup>3</sup> UCL Institute of Child Health, Press Release Sept 2007. Adult outcomes of binge drinking in adolescence: findings from a UK national birth cohort, *Journal of Epidemiology & Community Health* 2007 [http://www.ich.ucl.ac.uk/pressoffice/pressrelease\\_00553](http://www.ich.ucl.ac.uk/pressoffice/pressrelease_00553)

<sup>4</sup> Bignell, Paul, and Jonathan Owen. "Britain's booze culture is putting more children into hospital." *The Independent Online* Ed. Aug. 9, 2007

[http://www.news.independent.co.uk/uk/this\\_britain/article2281387.ece](http://www.news.independent.co.uk/uk/this_britain/article2281387.ece)

<sup>5</sup> Ibid.

<sup>6</sup> <http://www.24dash.com/health/18115.htm>

<sup>7</sup> White, Aaron, <http://www.duke.edu/~amwhite/Adolescence/adolescent5.html>