


# Advances in Adolescent Substance Abuse Treatment and Research



**Michael Dennis, Ph.D.**  
**Chestnut Health Systems,**  
**Bloomington, IL**

*Presentation to CSAT Strengthening Communities-Youth Program Grantee Meeting, Baltimore, MD, July 24-26, 2002. This presentation was supported by funds and data from the Center for Substance Abuse Treatment (CSAT's) Persistent Effects of Treatment Study (PETS, Contract No. 270-97-7011). The opinions are those of the author do not reflect official positions of the government*

# Goals of this Presentation



- **Review the prevalence, course, and consequences of adolescent substance use**
- **Summarize major trends in the adolescent treatment system**
- **Illustrate several challenges posed in adapting treatment to work with adolescents**
- **Identify some of the limitations of the current literature**

# The Prevalence and Course of Use

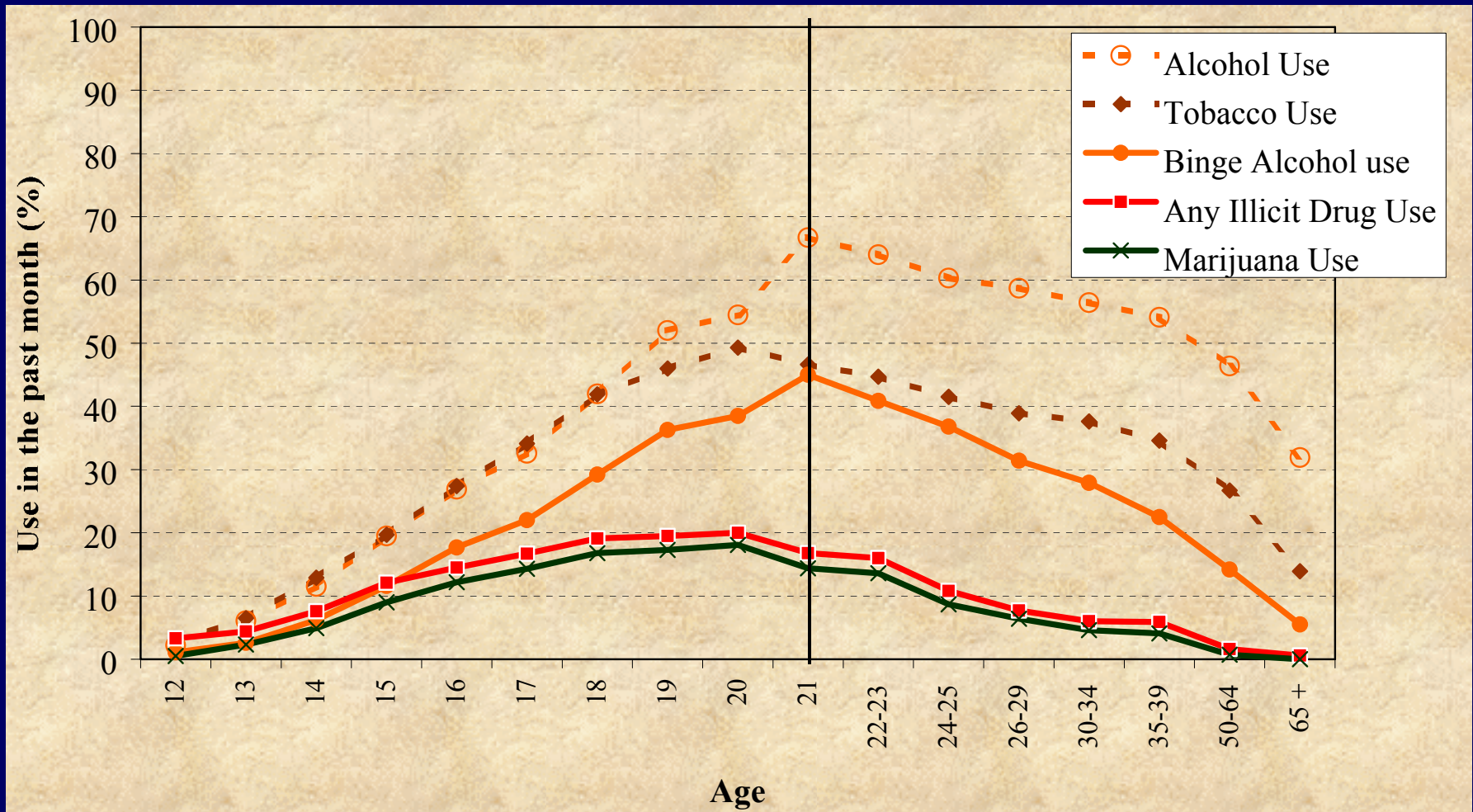
- While the public has generally focused on a leveling off of the prevalence of “any” substance use, the rates of daily use among 12th graders were still substantially higher than what it was in 1992 for
  - being drunk on alcohol (1.7% vs. 0.8%)
  - smoking tobacco (20.2% vs. 17.2%)
  - using marijuana (6.0% vs. 1.9%)
- From age 12 to 20 the rates of past-month use more than doubled for alcohol (20% to 75%), tobacco (18% to 40%), and marijuana (8% to 27%)
- By age 30, alcohol drops off by about 2%, tobacco by 5%, and marijuana drops off by 15%

# The Emerging Marijuana Problem

---

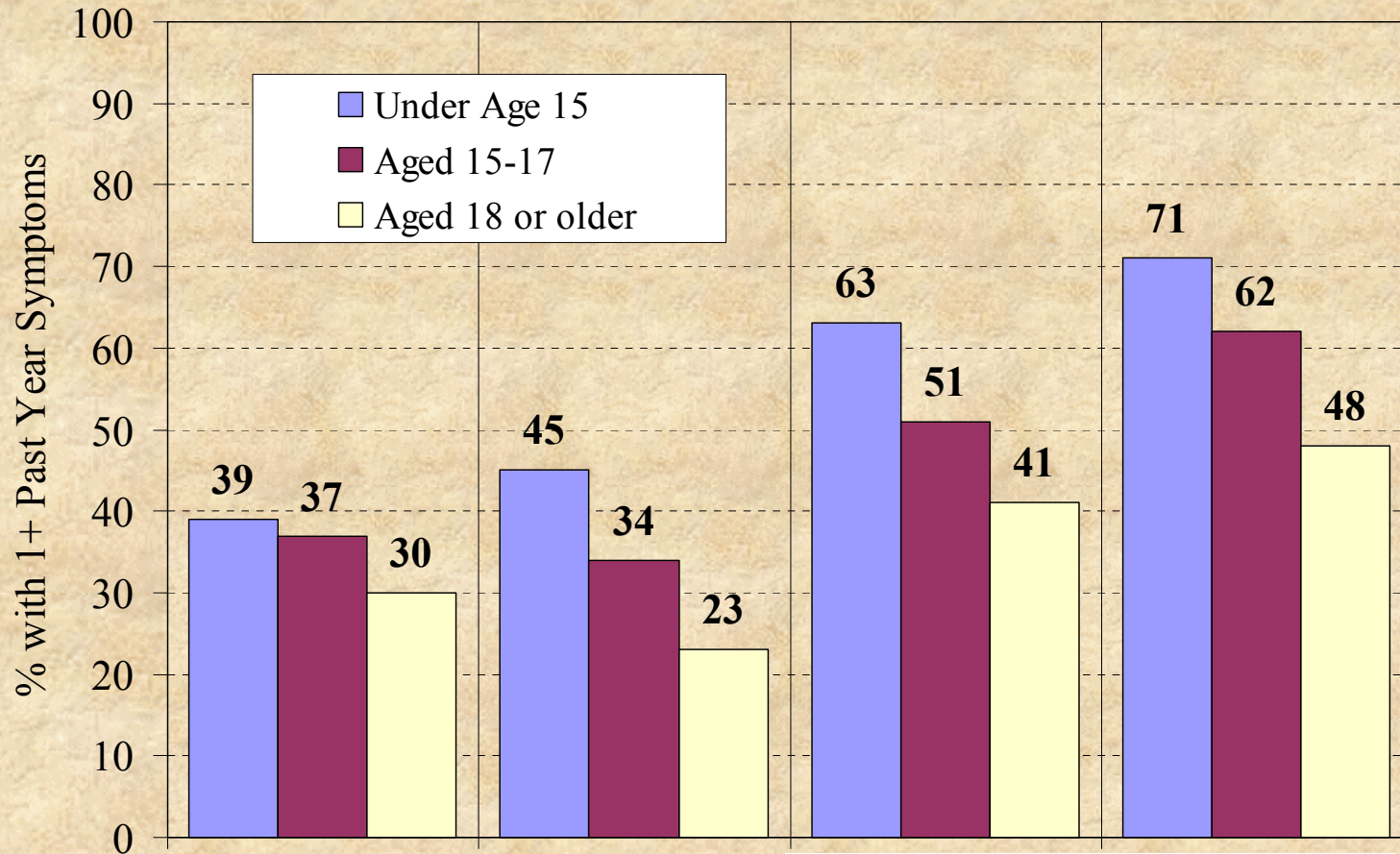
- From 1980 to 1997 the potency of marijuana in federal drug seizures increased three fold.
- The combination of alcohol and marijuana appears to be synergistic and leads to much higher rates of problems than would be expected from either alone.
- Combined marijuana and alcohol users are 4 to 47 times more likely than non users to have a wide range of dependence, behavioral, school, health and legal problems.
- Marijuana and alcohol are the leading substances mentioned in arrests, emergency room admissions, autopsies, and treatment admissions.

# Change in Past Month Substance Use by Age



Source: Dennis, M.L., (in press). Treatment Research on Adolescents Drug and Alcohol Abuse: Despite Progress, Many Challenges Remain. Connections and Data from the OAS 1999 National Household Survey on Drug Abuse

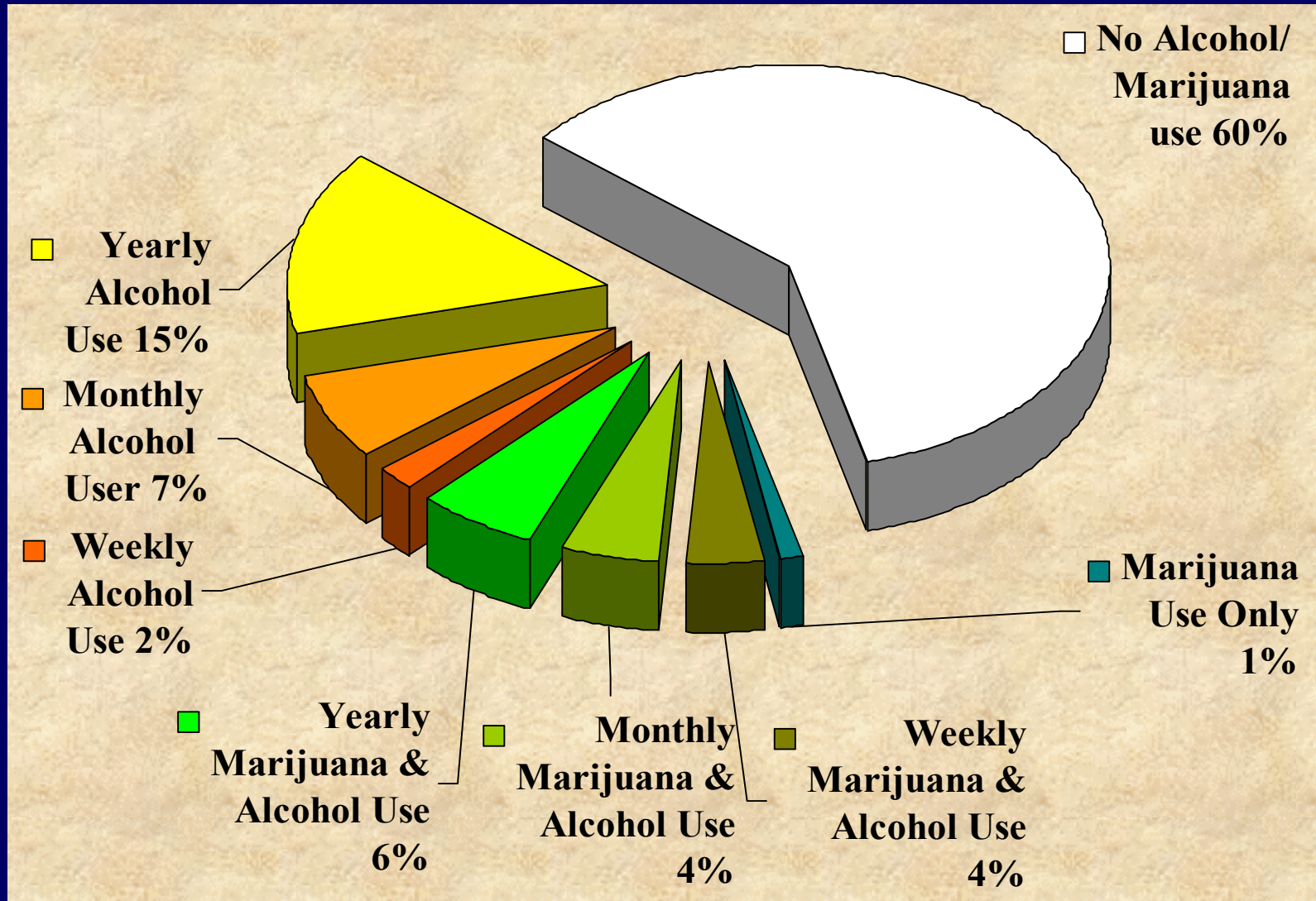
# Significance of Age of First Use



<b>Tobacco:</b> Pop.=151,442,082 OR=1.3*	<b>Alcohol:</b> Pop.=176,188,916 OR=1.9*	<b>Marijuana:</b> Pop.=71,704,012 OR=1.5*	<b>Other Drugs:</b> Pop.=38,997,916 OR=1.5*
--	--	---	---

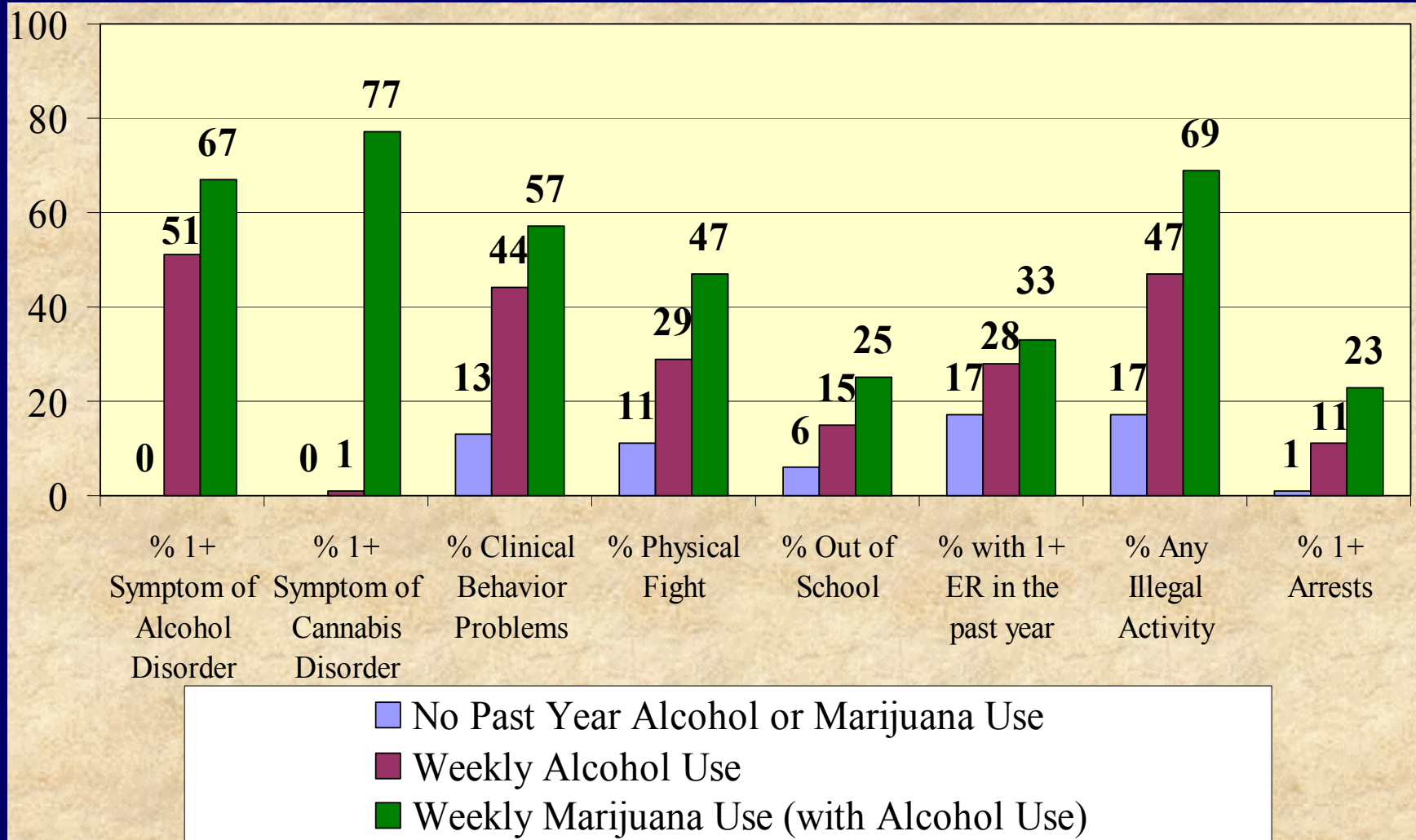
\* p<.05

# Substance Use in the Community



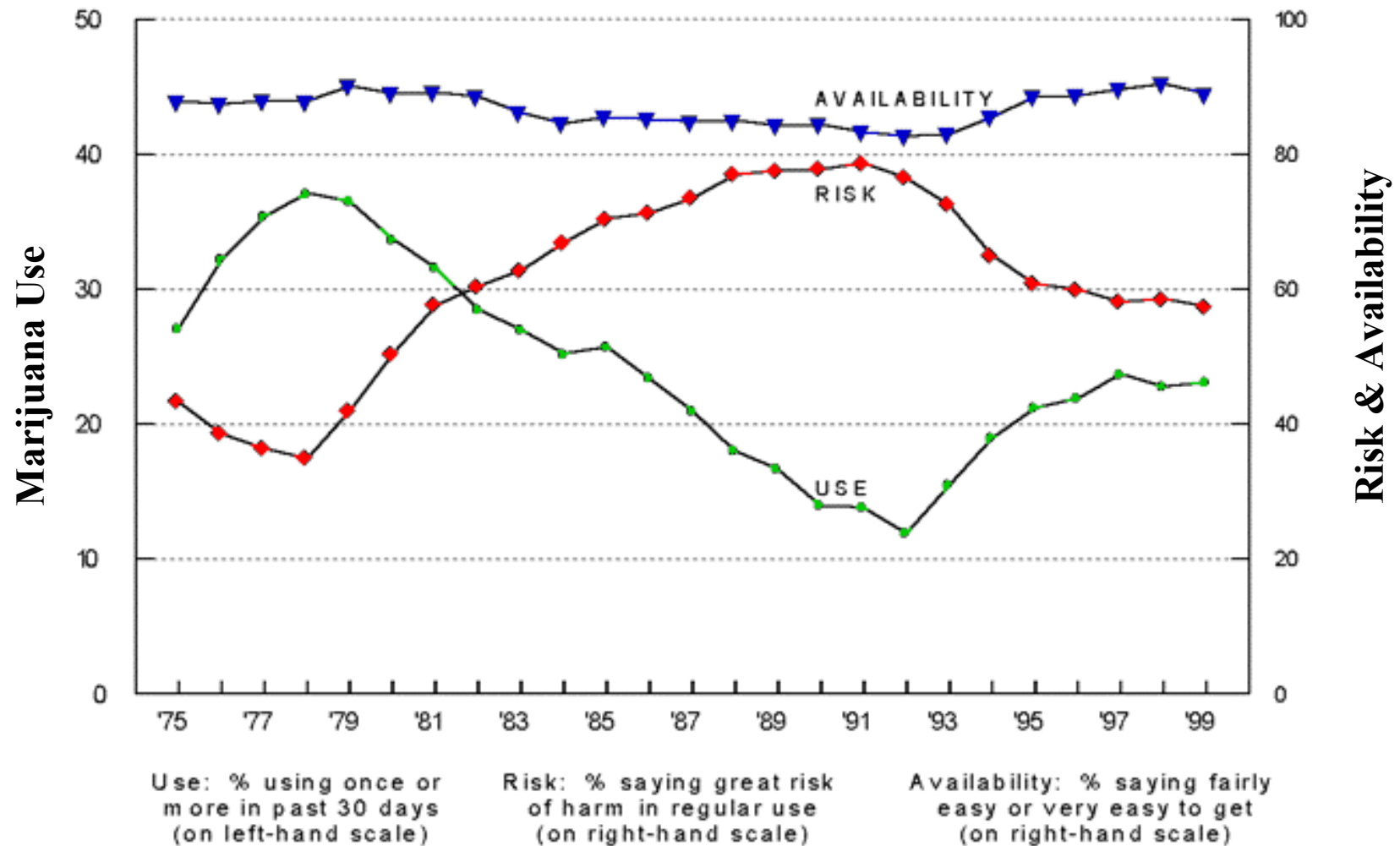
Source: Dennis, M.L., McGeary, K.A. (1999, Fall).

# Consequences of Substance Use

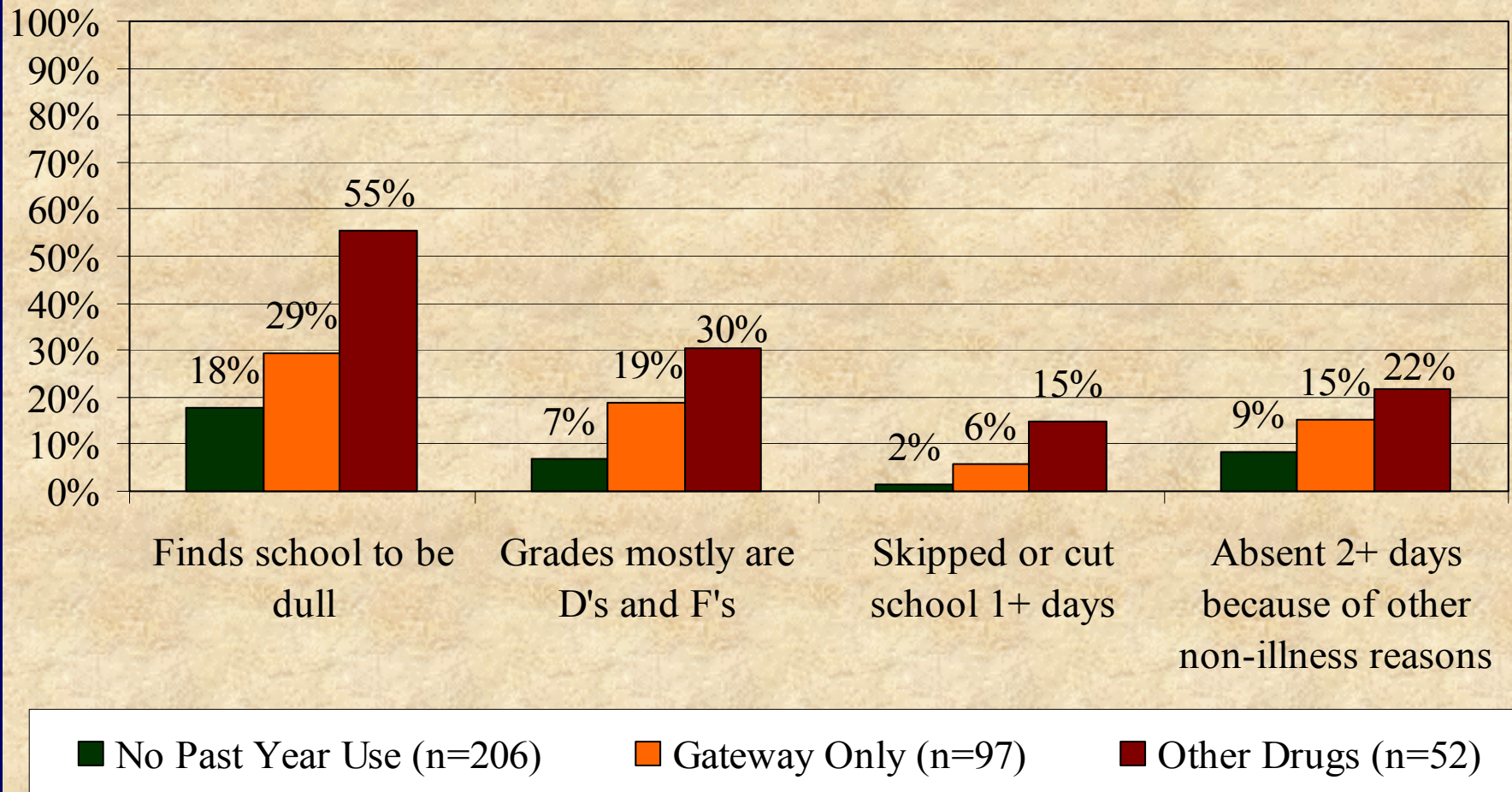


Source: Dennis, M.L., Godley, S.H., & Titus, J.C. (1999, Fall).

# Importance of Perceived Risk

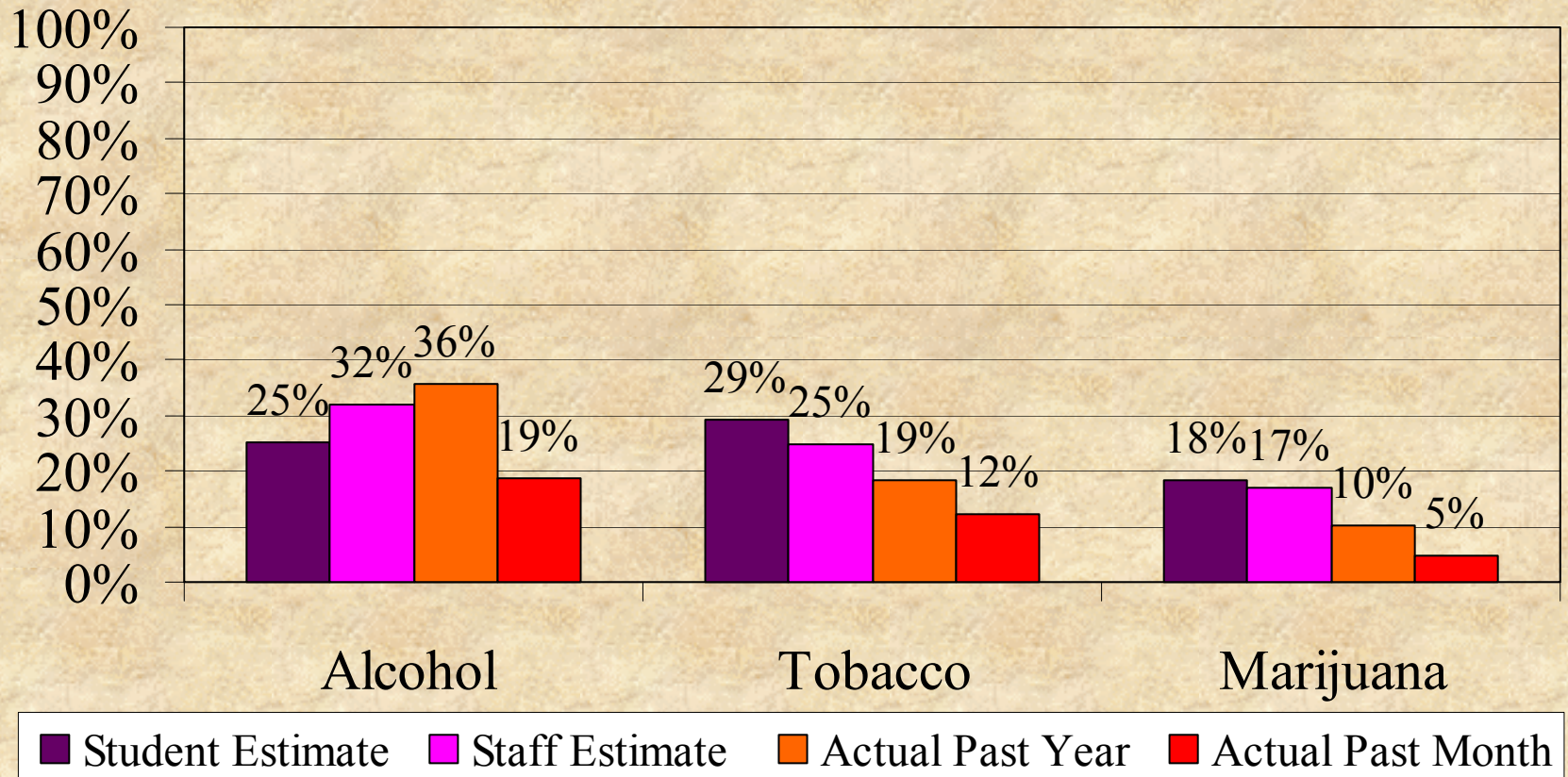


# Substance Use is a School Problem



Source: Dennis, M.L., & Adams, L. (2001) school survey.

# Student and Staff Overestimate Use



Source: Dennis, M.L., & Adams, L. (2001) school survey.

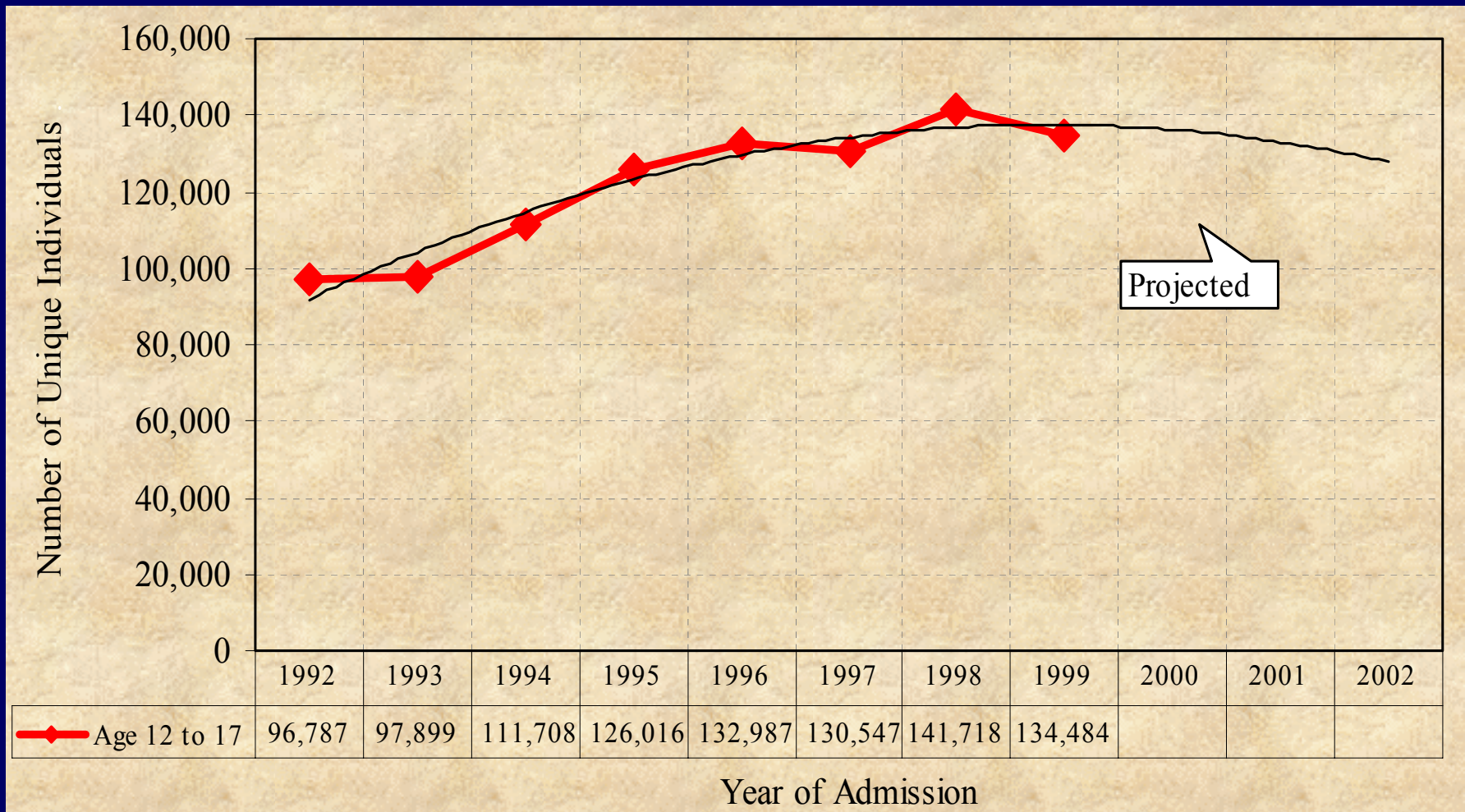
# The Adolescent Treatment System



- **Less than 1/10th of adolescents with substance dependence problems receive treatment**
- **Under 50% stay 6 weeks, 75% stay less than the 3 months recommended by NIDA**
- **From 1992 to 1998, admissions to treatment increased 53% (96,787 to 147,899), but then dropped off in 1999**
- **From 1992 to 1998, admissions for treatment of primary, secondary or tertiary marijuana use disorders increased 115% (51,081 to 109,875)**

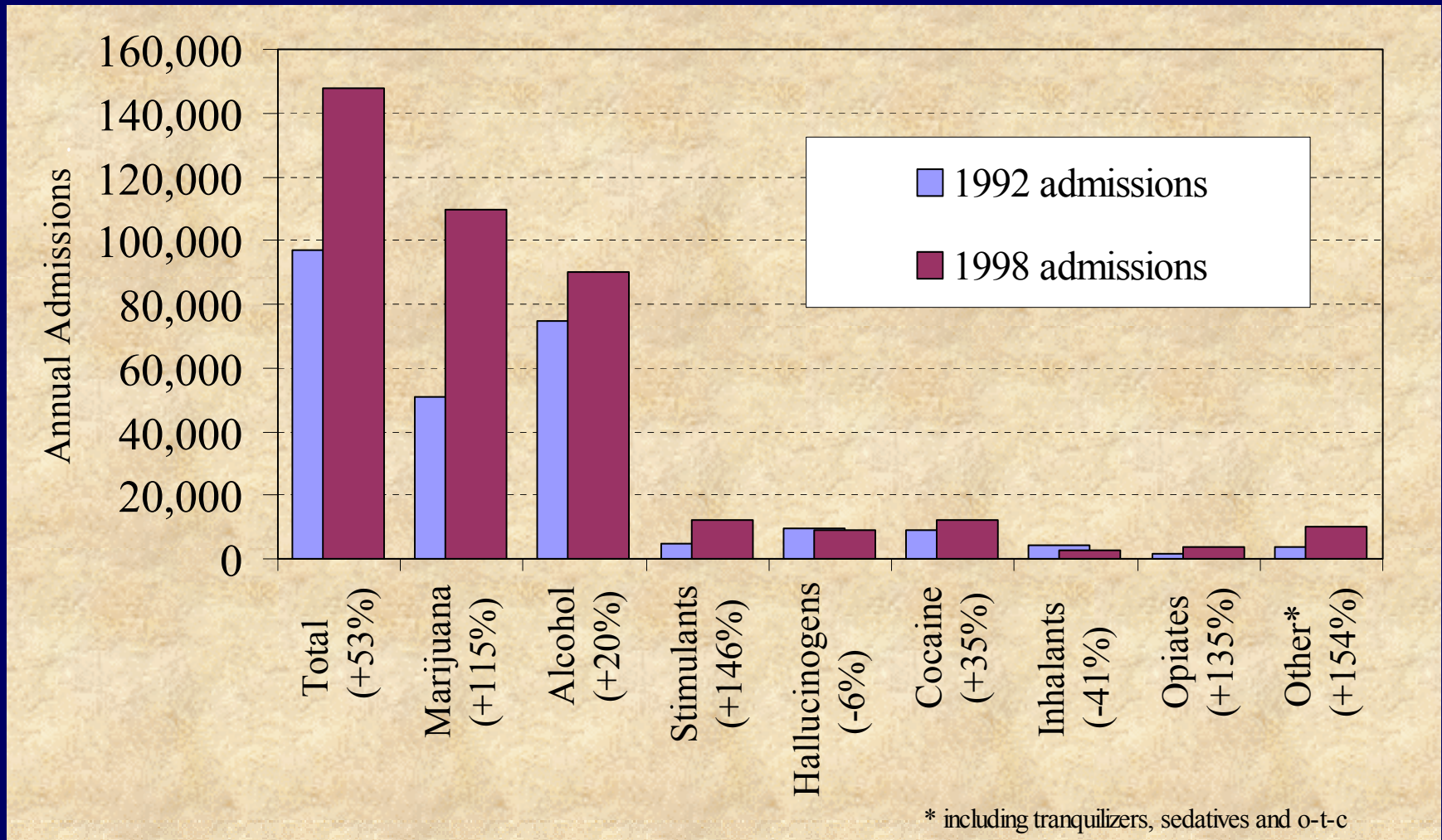
*Source: Dennis, Dwaud-Noursi, Muck, & McDermeit, in press; Hser et al., 2001; OAS, 2000*

# Trend in Adolescent Substance Abuse Treatment Admissions: 1992 to 1999



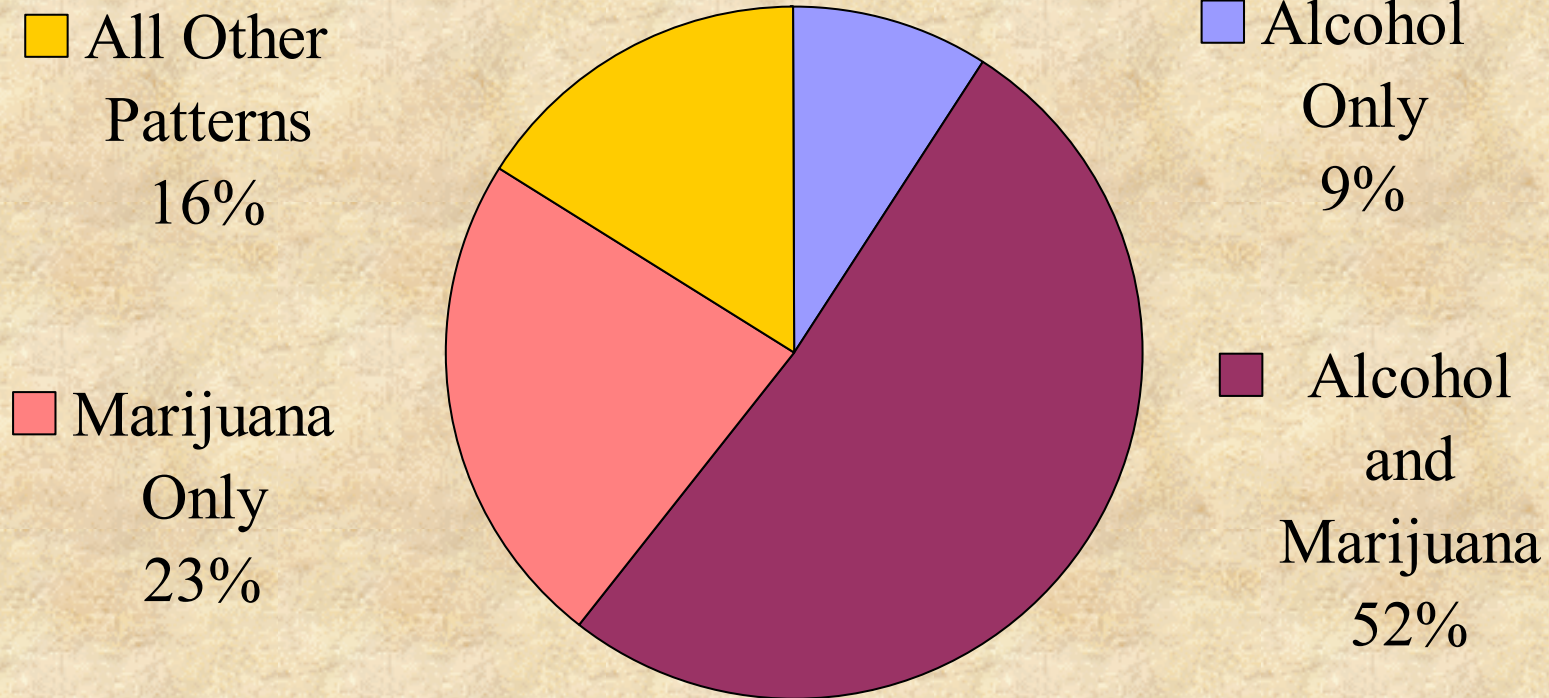
Source: Office of Applied Studies Treatment Episode Data Set (TEDS), <http://www.samhsa.gov/oas/teds/99TEDS/99Teds.pdf>

# Adolescent Admissions (1992-1998)

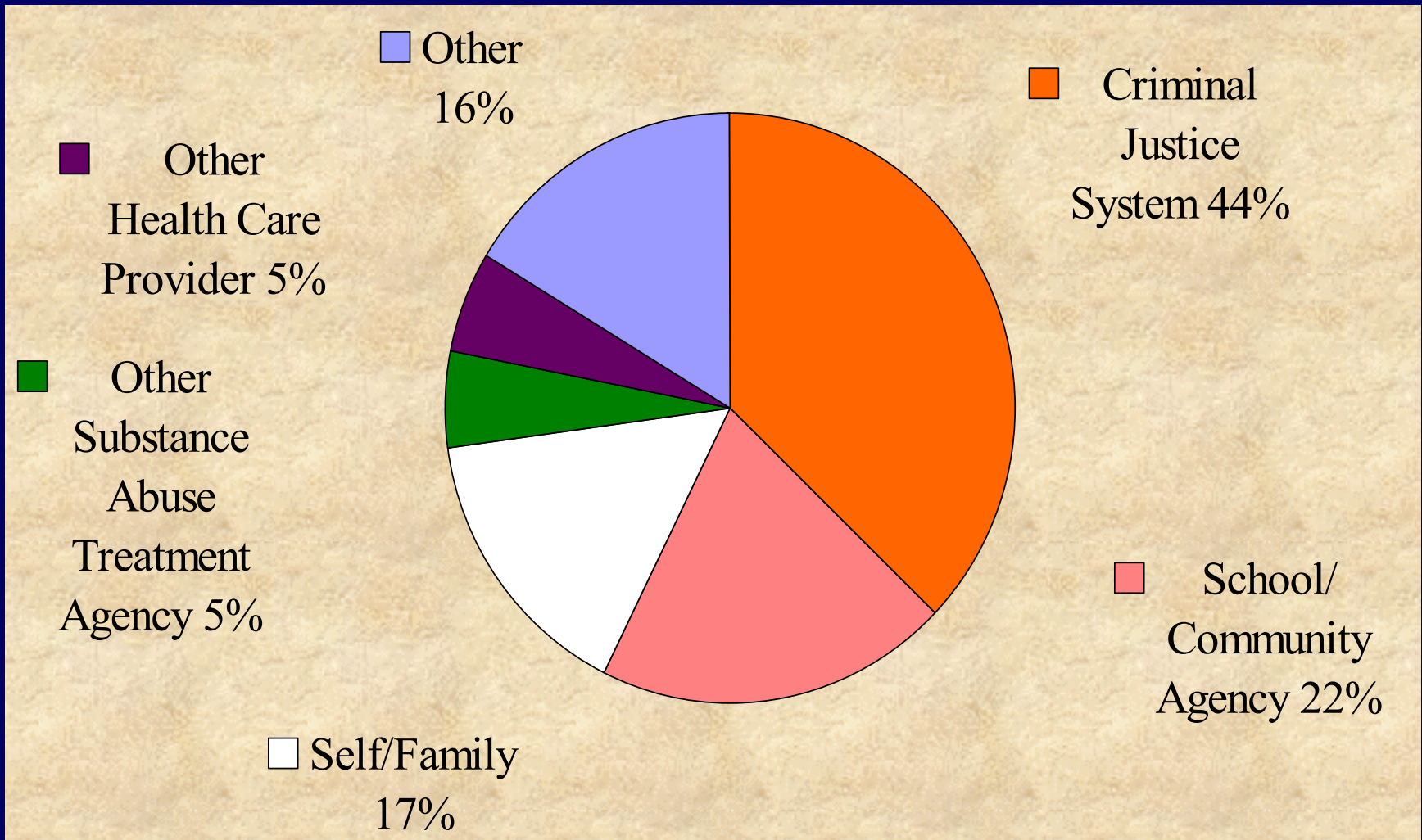


Source: Dennis, Dawud-Noursi, Muck & McDermeit, in press and OAS (2000) 1998 Treatment Episode Data Set (TEDS)

# Patterns of Substance Use Problems

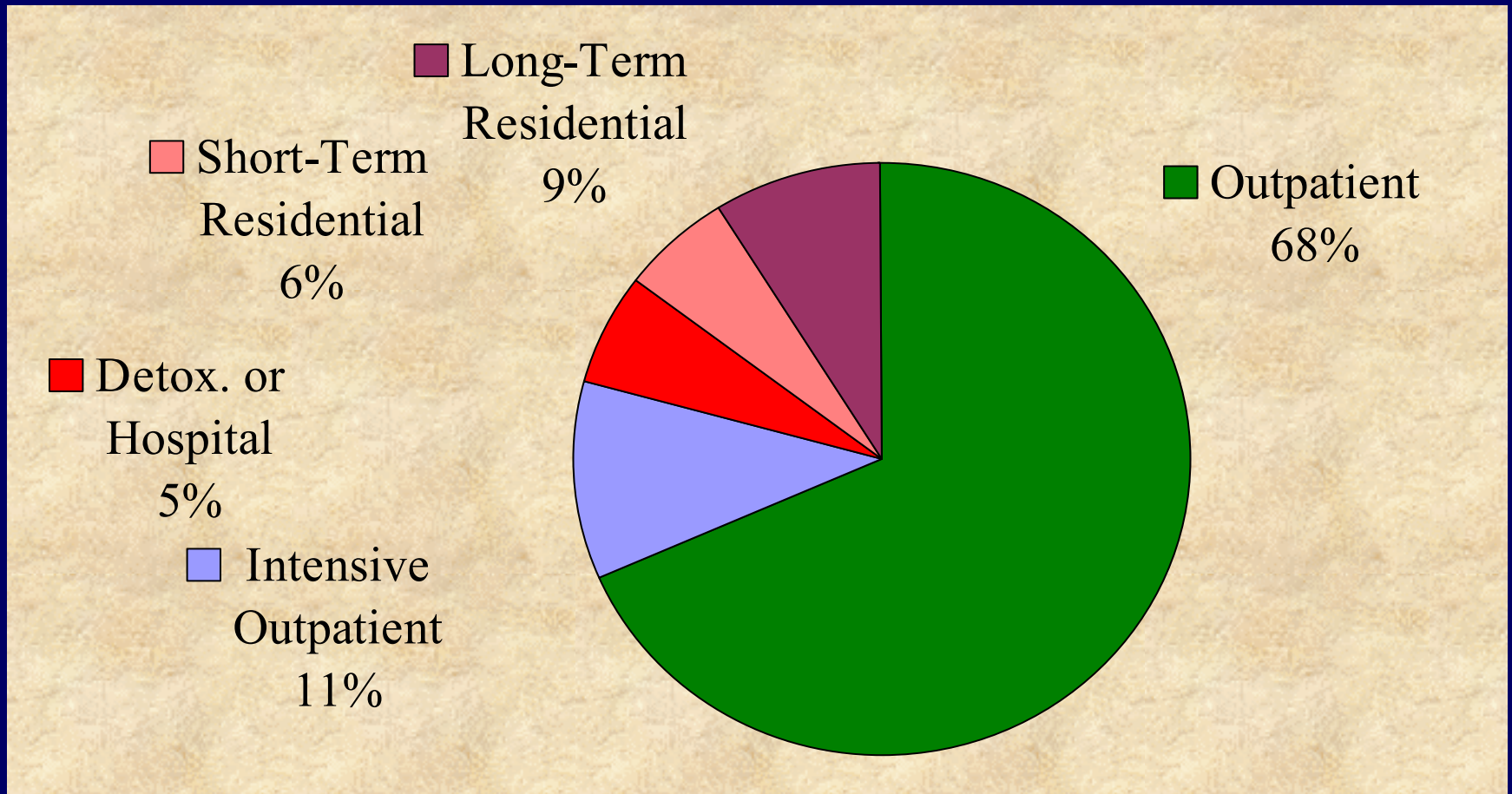


# Sources of Adolescent Referrals

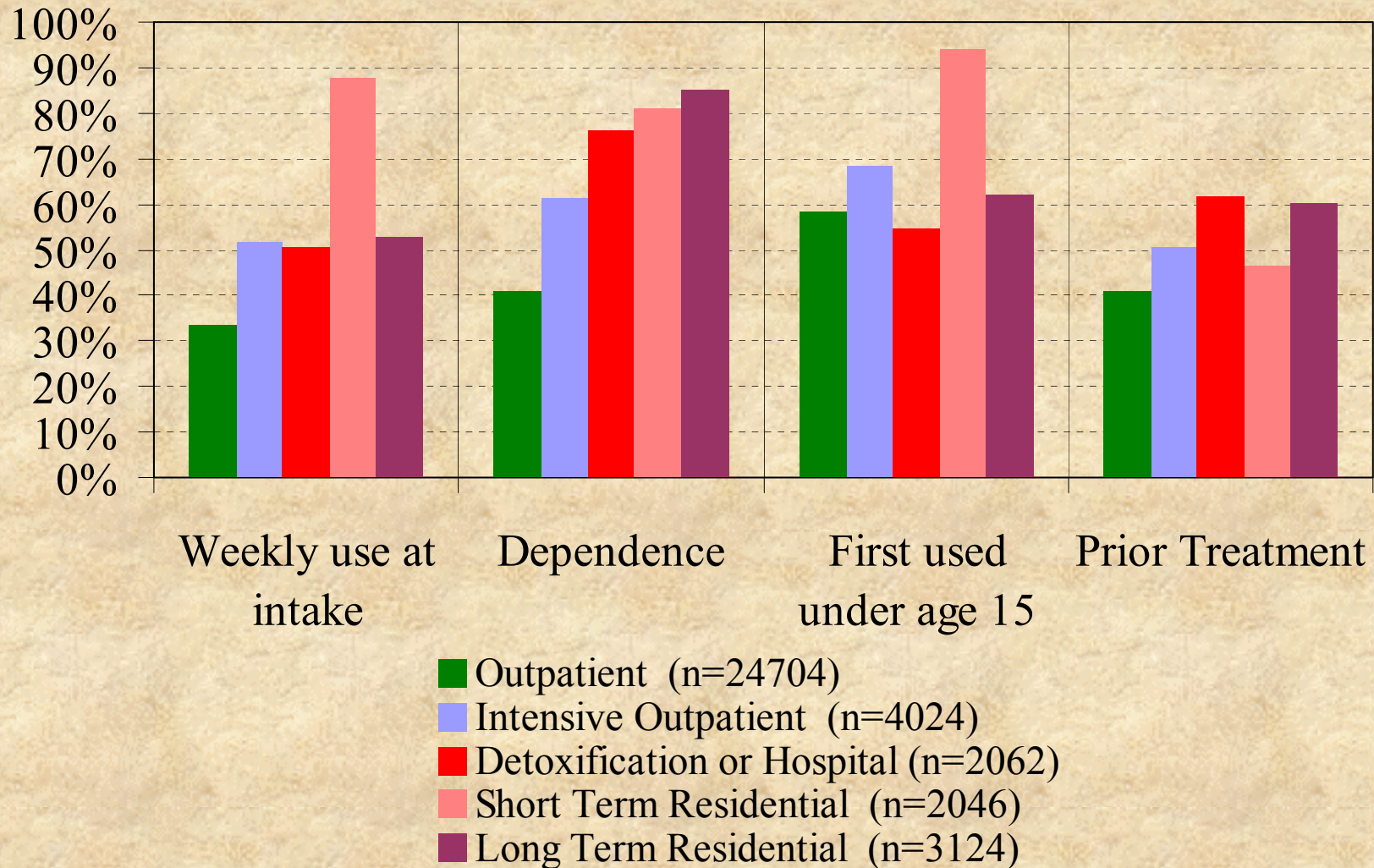


Source: Dennis, Dawud-Noursi, Muck & McDermeit, in press and OAS (2000) 1998 Treatment Episode Data Set (TEDS)

# Level of Care at Admission



# Severity Varies by Level of Care



Source: Dennis, Dawud-Noursi, Muck & McDermeit, in press and OAS (2000) 1998 Treatment Episode Data Set (TEDS)

# Knowledge Base from 36 Studies



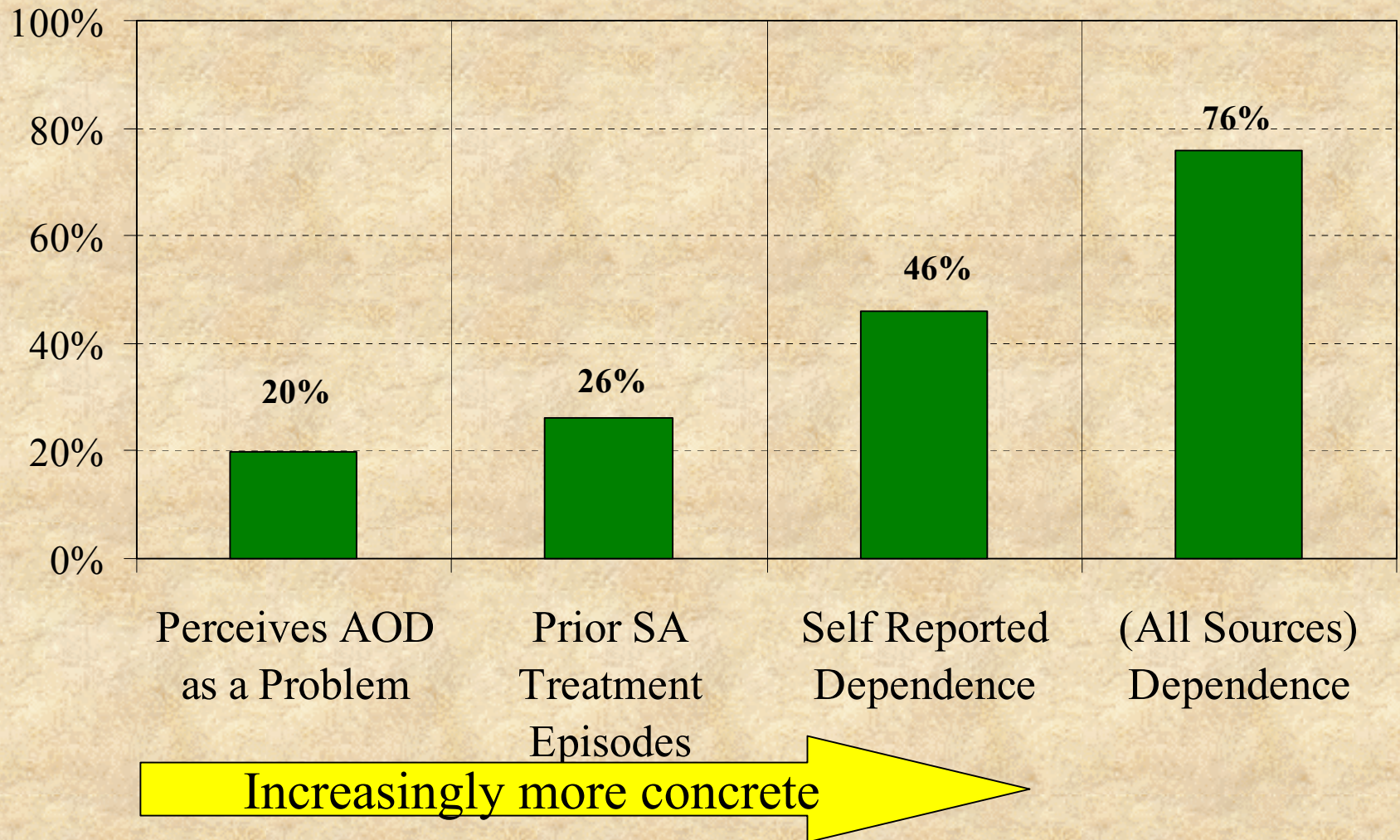
- **7 large multi-site longitudinal studies (DARP, TOPS, SROS, TCA, NTIES, DATOS-A, DOMS), including 1 large multi-site experiment (Cannabis Youth Treatment - CYT)**
- **21 behavioral treatment studies (12-step, behavioral, family, inpatient, therapeutic communities, engagement, aftercare), including CYT and 1 pharmacology-behavioral (CBT) trial**
- **8 pharmacology treatment studies (bupropion, disulfiram, fluoxetine, lithium, pemoline, sertraline) and 1 pharmacology-behavioral (CBT) trial**

# Lessons from 8 Longitudinal Studies



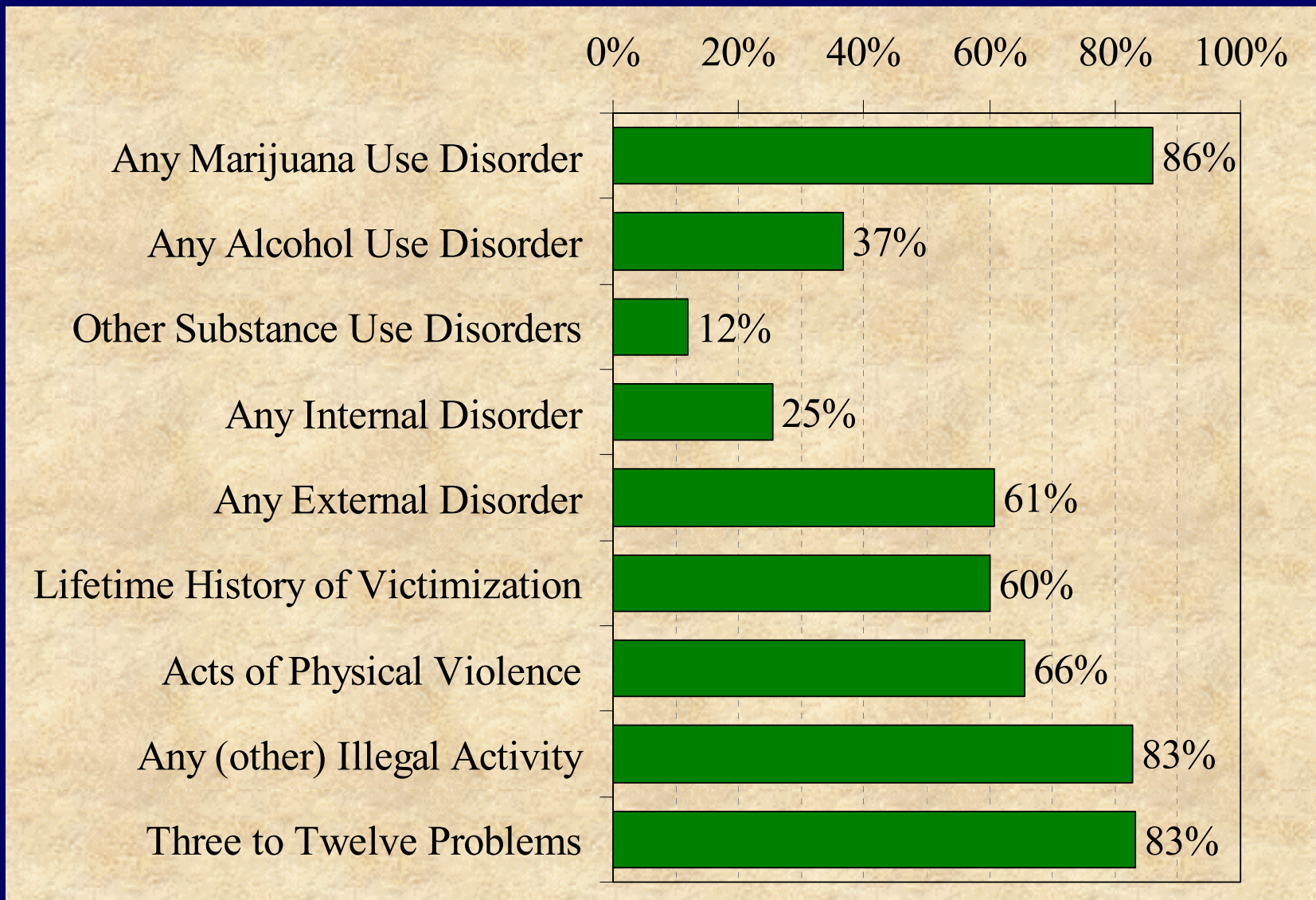
- **Assessment needs to be very concrete**
- **Multiple co-occurring problems are the norm in clinical samples of SUD adolescents** (*60-80% external disorders, 25-60% mood disorders, 16-45% anxiety disorders, 70-90% 3 or more diagnoses*)
- **Adolescents are involved in multiple systems competing to control their behavior** (*e.g, family, peers, school, work, criminal justice, and controlled environments*)
- **Relapse is common in the first 3-12 months**
- **Recovery often takes multiple attempts and episodes of care that may take years**
- **Field shifting to treatment models that:**
  - are more developmentally appropriate for adolescents
  - involve hybrid approaches and continuum of care
  - are manual-guided

# Impact of Definition and Sources



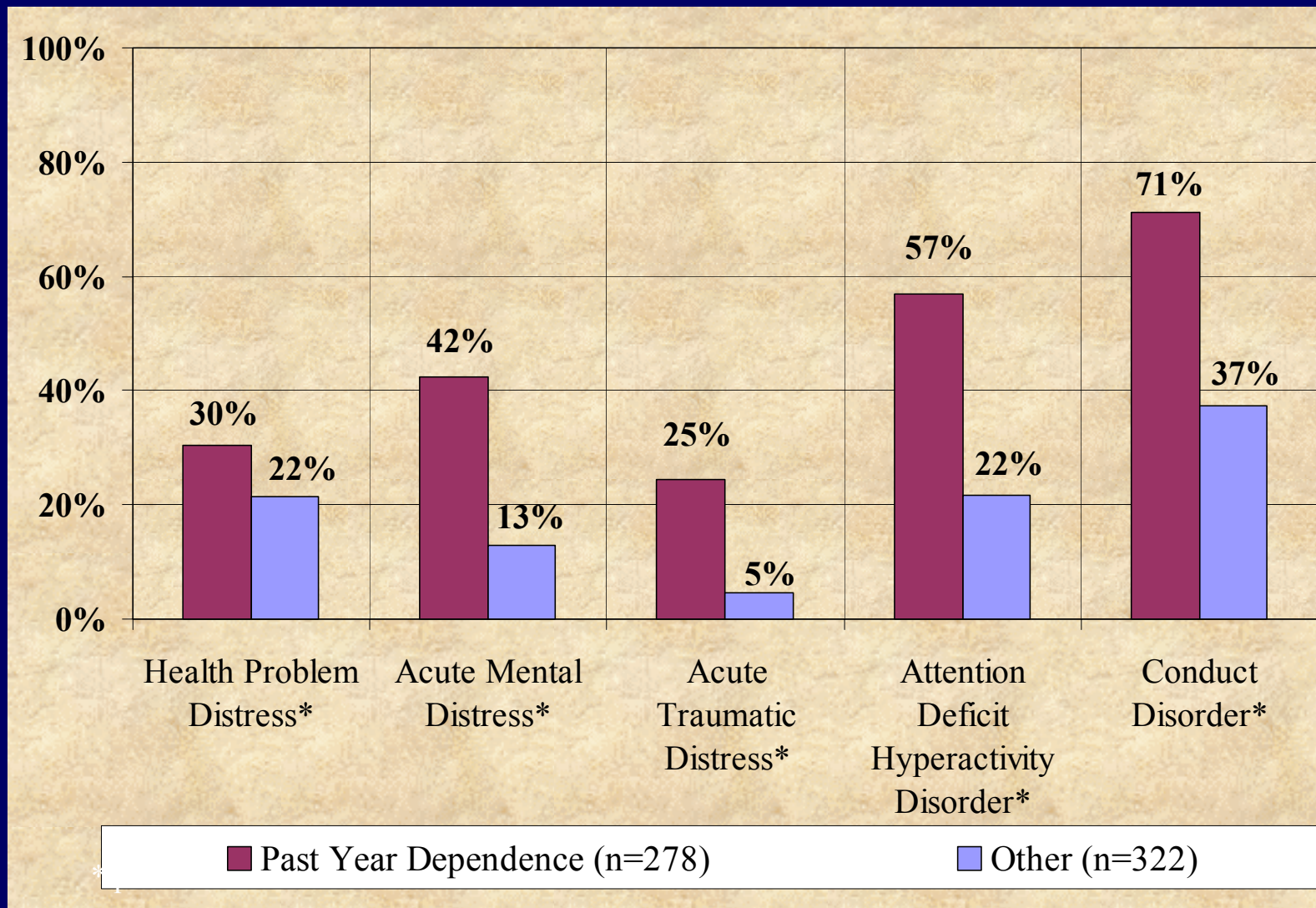
Source: Cannabis Youth Treatment (CYT) study

# Self-Reported Clinical Severity



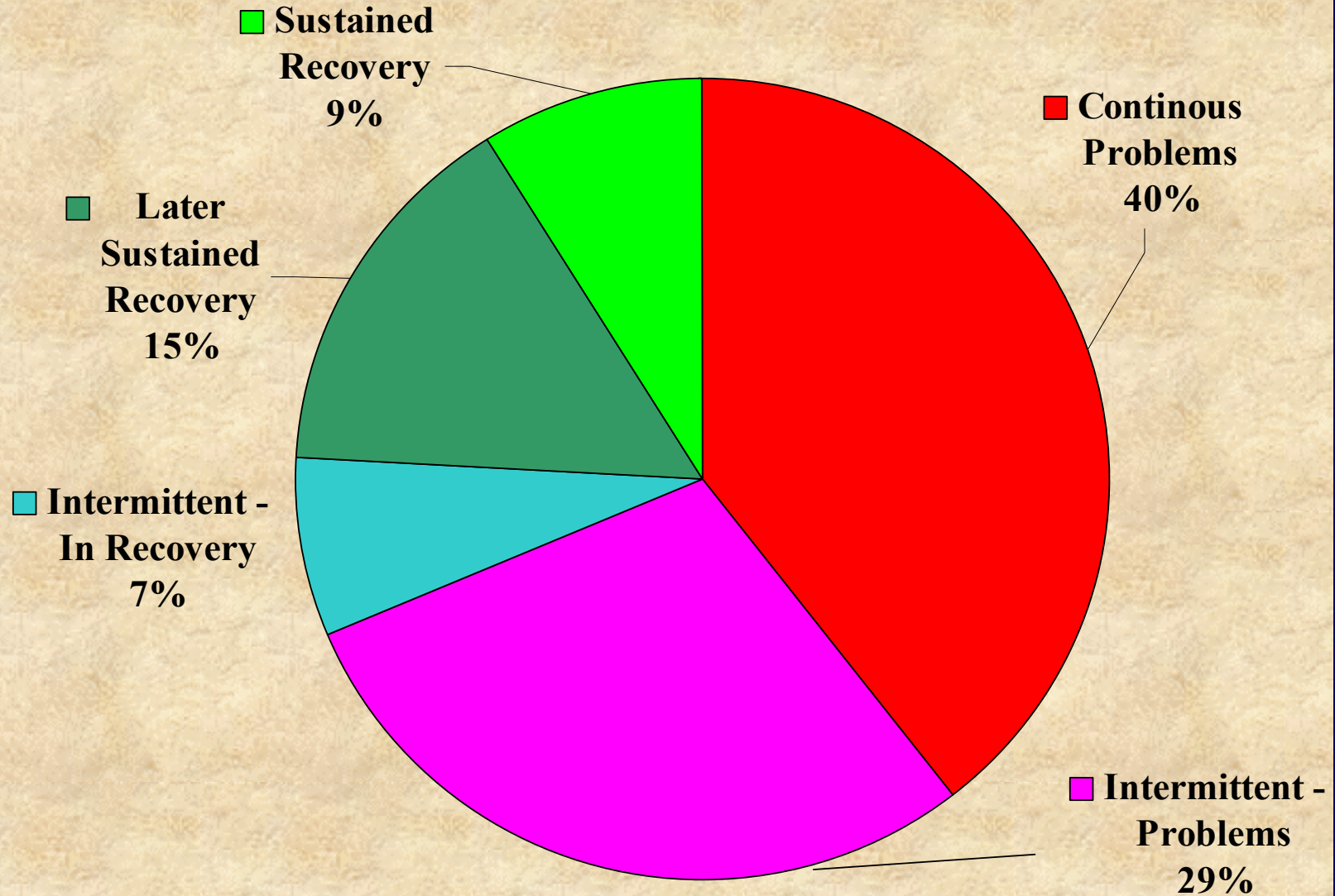
Source: Cannabis Youth Treatment (CYT) study

# Severity is Related to Other Problems



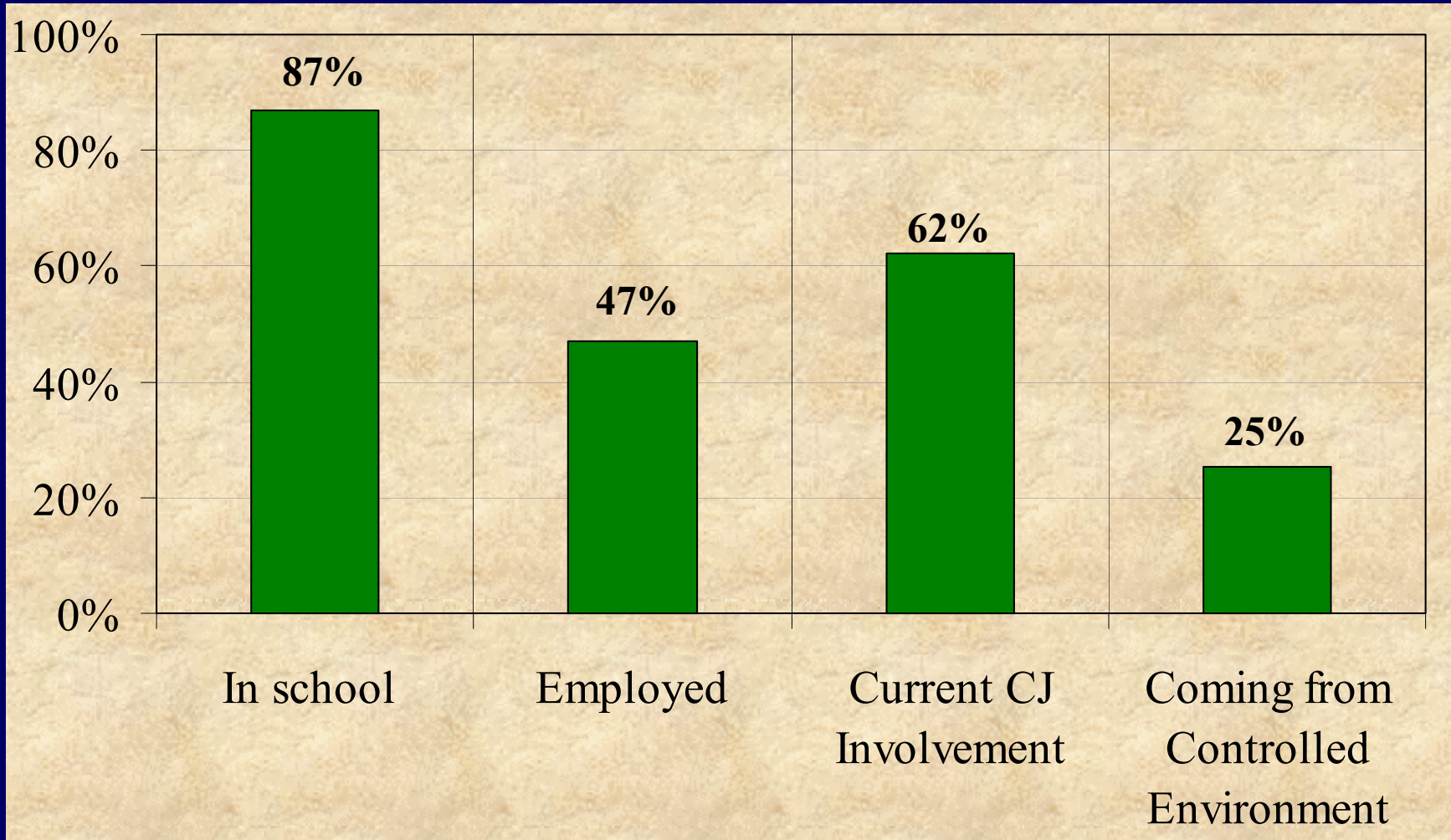
Source: Cannabis Youth Treatment (CYT) study

# Recovery Pattern Over 12 Months



Source: Cannabis Youth Treatment (CYT) study

# Involvement in Multiple Systems



Source: *Cannabis Youth Treatment (CYT) study*

# 21 Behavioral Treatment Studies

- **Interventions associated with decreased substance use and problems:**
  - 1 experimental and 3 non-experimental studies of 12-step treatment (e.g., CD, Hazelden)
  - 6 experimental studies of behavior therapies (e.g., ACRA, AGT, CBT, MET, RP)
  - 10 experimental studies of family therapy (CFT, FDE, FFT, FSN, FST, MDFT, MST, PBFT, TIPS)
  - 6 longitudinal studies of Inpatient (STR, inpatient)
  - 7 longitudinal studies of Therapeutic communities (TC, LTR)
- **Another 3 experimental studies have shown that engagement and maintenance is associated with several interventions (case management, stepping down residential to OP, assertive aftercare)**

*Source: Summary table*

# Behavioral Studies - Continued



- **Interventions that are associated with no or minimal change in substance use or symptoms:**
  - **Passive referrals**
  - **Educational units alone**
  - **Probation services as usual**
  - **Unstandardized outpatient services as usual**
- **Interventions associated with deterioration:**
  - **treatment of adolescents in “groups including one or more highly deviant individuals” (but NOT all groups)**
  - **treatment of adolescents in adult units and/or with adult models/materials (particularly outpatient)**

*Source: See Summary Tables Provided*

# Lessons from Behavioral Studies



- Improvements generally came during active treatment and were sustained for 12 or more months
- Family therapies were associated with less initial change but more change post active treatment (and the same in long-term effects)
- Effectiveness was associated with therapies that:
  - were manual-guided and had developmentally appropriate materials
  - involved more quality assurance and clinical supervision
  - achieved therapeutic alliance and early positive outcomes
  - successfully engaged adolescents in aftercare, support groups, positive peer reference groups, more supportive recovery environments

*Source: See Summary Tables Provided*

# Lessons from Behavioral Studies



- The effectiveness of group therapy was dependent on the composition of the group
- The effectiveness of therapy was dependent on changes in the recovery environment
- Effectiveness was not consistently associated with the amount of therapy over 6-12 weeks or type of therapy
- As other therapies have improved, there is no longer the clear advantage of family therapy found in early literature reviews
- Differences between conditions change over time, with many people fluctuating between use and recovery

# Lessons from 9 Pharmacology Studies

---

- **No controlled trials of medication for treating withdrawal, substitution therapy, blocking therapy, aversive therapy or management of cravings**
- **Several adolescent case studies (1-5 subjects) suggest that:**
  - Naltrexone (ReVia®) reduced alcohol cravings
  - Desipramine (Pertofrane®) reduced alcohol/cocaine cravings
  - Disulfiram (Antabuse®) had mixed results in alcohol aversion
  - Bupropion (Wellbutrin®) helped adolescents quit tobacco use
- **One case study reported six deaths secondary to the concomitant use of buprenorphine and benzodiazepines**

*Source: Summary Tables Provided and Bukstein & Kithas, in press*

# Pharmacology Studies - continued

- **Most studies of other disorders exclude adolescents with substance use disorders**
- **Small (n of 8-25), short-term (4-12 weeks) studies suggest medication can be used to effectively treat several co-occurring problems:**
  - Fluoxetine (Prozac®) & Sertaline (Zoloft®) helped reduce depressive symptoms
  - Lithium carbonate (Eskalith®) reduced bipolar symptoms and positive urine rates
  - Pemoline (Cylert®) and Bupropion (Wellbutrin®) reduced symptoms of ADHD
- **One case study reported serious side effects secondary to the concomitant use of tricyclic antidepressants and marijuana**

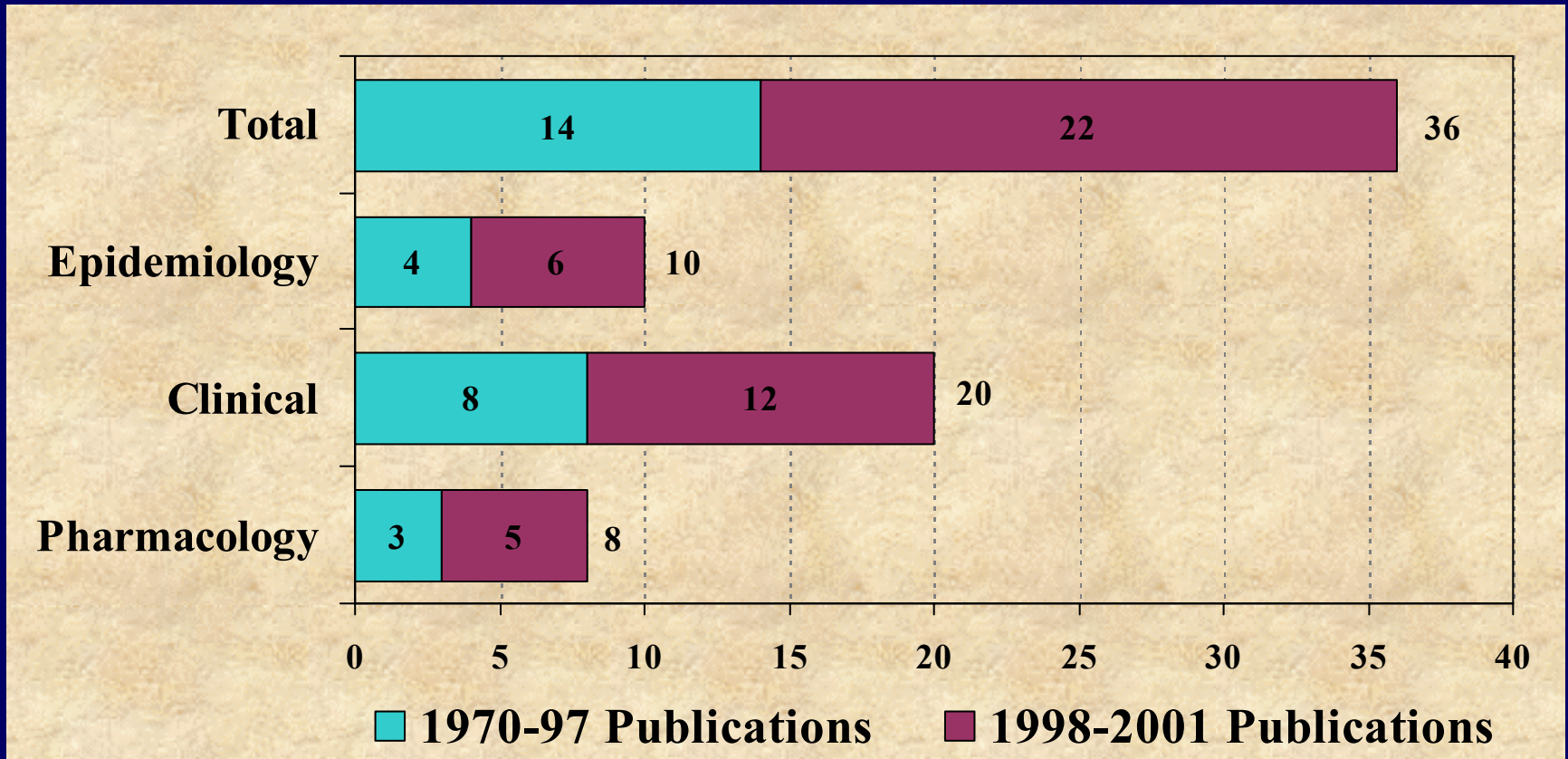
*Source: Summary Tables Provided and Bukstein & Kithas, in press*

# Limitations of the Literature



- **Small sample sizes (most under 50)**
- **High rates (30-50%) of refusals by eligible people**
- **Unstandardized measures, no measures of abuse or dependence, no measures of comorbidity**
- **Unstandardized and minimally-supervised therapies (making replication very difficult)**
- **Minimal information on services received**
- **High rates (20-50%) of treatment dropout**
- **High rates of attrition from follow-up (25-54%) leading to potentially large (unknown) bias**

# Studies by Date of First Publication



*With over 60% of the studies first published in the past 3 years and over 3 dozen more currently in the field, we are entering a “renaissance of knowledge” in this area.*

# Studies are Improving!



- **New studies are likely to have higher rates of participation (70-90%), treatment completion (70-85%), and successful follow-up (85-95%)**
- **They are more likely to involve standardized assessments, manual-guided therapy, and better quality assurance/clinical supervision**
- **Experimental design, multiple time points of assessment and follow-up lasting 1 or more years**
- **Economic analysis of their costs, cost-effectiveness and benefit cost**

# Publications Just Around the Corner

---

- 1997 CSAT funded the CYT multi-site experiment to evaluate the effectiveness of five promising manual-guided approaches to adolescent outpatient treatment
- 1998 CSAT/NIAAA funded a group of 14 research studies on early intervention/treatment of adolescents
- 1998 CSAT funded 10 grants to manualize exemplary adolescent programs and rigorously evaluate them
- 2000 NIDA started releasing the 12-month outcomes from its DATOS-Adolescent study of 1700 adolescents in a 1994-95 admission cohort
- 2000-present, CSAT funded a 30-month follow-up of 1200 adolescents under its PETS-Adolescent Study
- Several books and special issues of Addiction, Journal of Adolescent Research, Journal of Child Maltreatment

# Planning Your Work



- **Build on current advances, but do not be afraid to try new things**
- **When adapting material, be sure to think about what it takes to make it developmentally appropriate**
- **Use standardized measures where possible to capitalize on prior work.**
- **Make sure you have all of the types of measures you need**
- **Go beyond the acute care model and think in terms of a continuum of care**

# Normal Adolescent Development

---

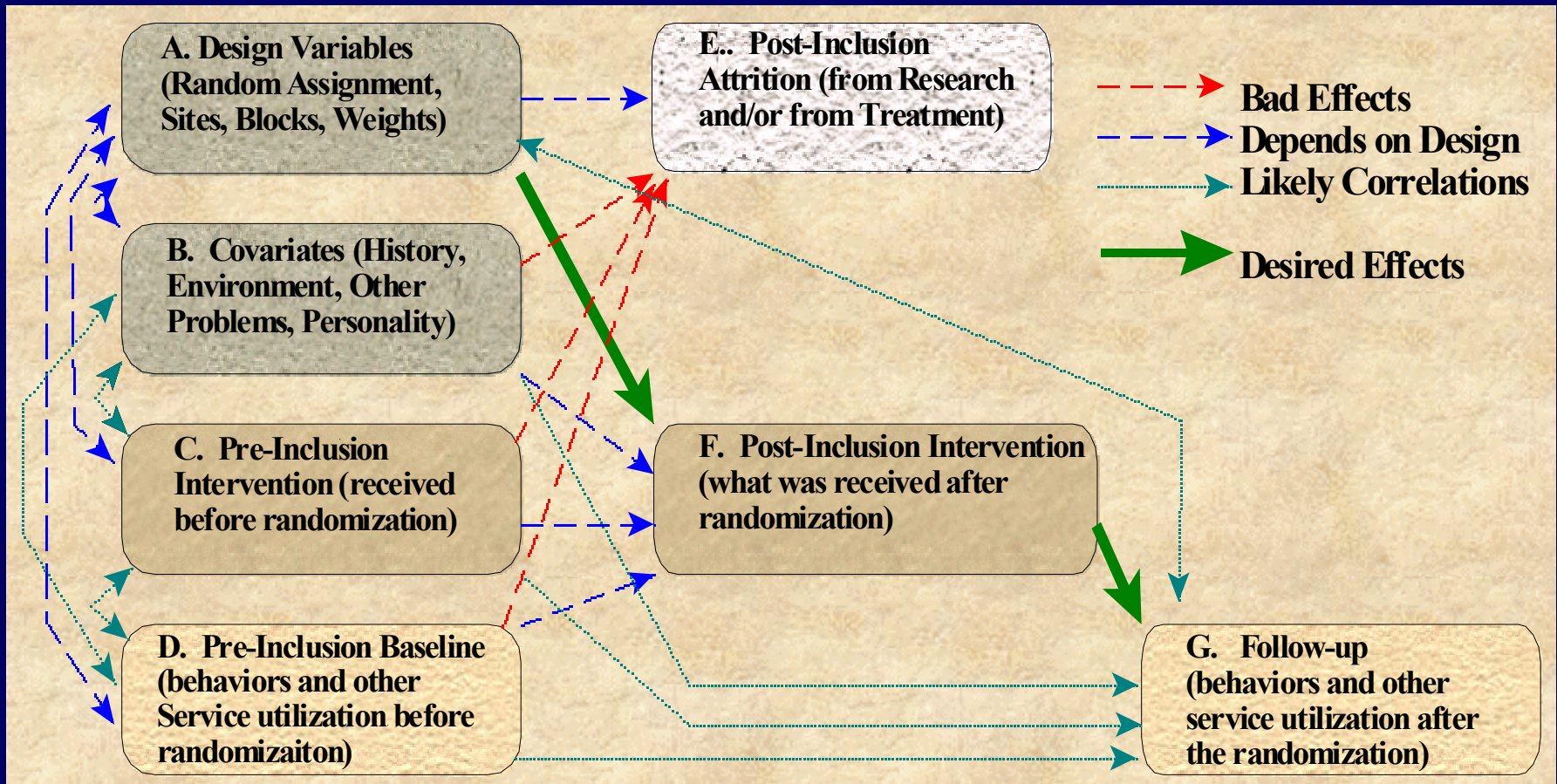
- **Biological changes in the body, brain, and hormonal systems that continue into mid-to-late 20s.**
- **Shift from concrete to abstract thinking.**
- **Improvements in the ability to link causes and consequences (particularly strings of events over time).**
- **Separation from a family-based identity and the development of peer- and individual-based identities.**
- **Increased focus on how one is perceived by peers.**
- **Increasing rates of sensation seeking/trying new things.**
- **Development of impulse control and coping skills.**
- **Concerns about avoiding emotional or physical violence.**

# Adapting Treatment for Adolescents



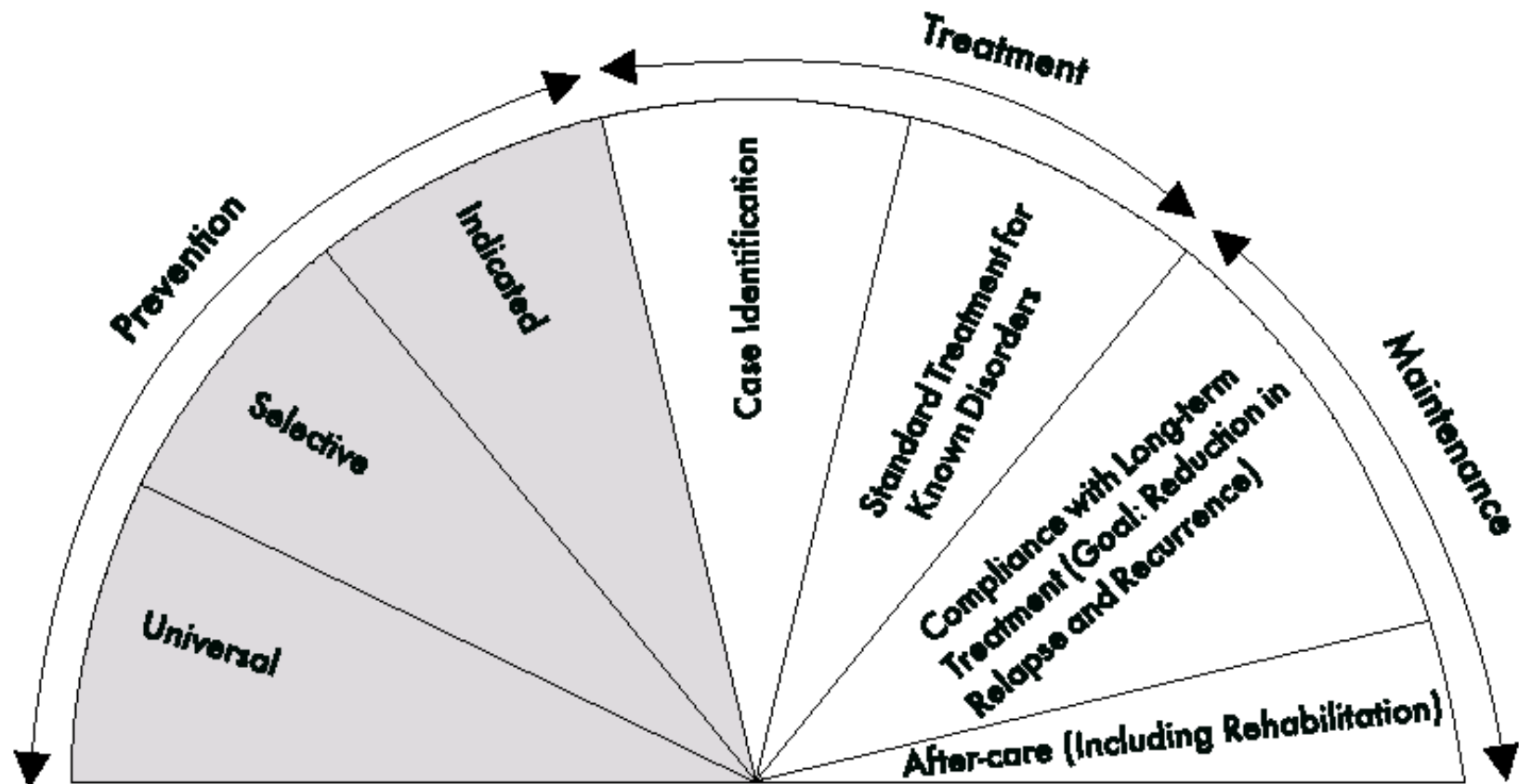
- **Examples need to be altered to relevant substances, situations, and triggers**
- **Consequences have to be altered to things of concern to adolescents**
- **Most adolescents do not recognize their substance use as a problem and are being mandated to treatment**
- **All materials need to be converted from abstract to concrete concepts**
- **Comorbid problems (mental, trauma, legal) are the norm and often predate substance use**
- **Treatment has to take into account the multiple systems (family, school, welfare, criminal justice)**
- **Less control of life and recovery environment**
- **Less aftercare and social support**
- **Complicated staffing needs**

# Role of Different Measures



Source: Dennis, M.L., Huebner, R.B., McLellan, A.T. (2001)

# Continuum of Care Framework



Reprinted with permission from *Reducing Risks for Mental Disorders: Frontiers for Preventive Intervention Research*. Copyright 1994, National Academy of Sciences. Courtesy of the National Academy Press, Washington, DC.

# Concluding Comments



- We are entering a renaissance of new knowledge in this area, but are only reaching 1 of 10 in need
- Several interventions work, but 2/3 of the adolescents are still having problems 12 months later
- We need to move beyond focusing on minor variations in therapy (behavioral brand names) and acute episodes of care to focus on continuing care and a recovery management paradigm
- It is very difficult to predict exactly who will relapse so it is essential to conduct aftercare monitoring with all adolescents

# Resources

- Copy of these slides and its references
- Adolescent Treatment Bibliography
- Adolescent assessment grid based on our work and:
  - *CSAT TIP 3 at*  
[http://www.athealth.com/practitioner/ceduc/health\\_tip31k.html](http://www.athealth.com/practitioner/ceduc/health_tip31k.html)
  - *NIAAA Assessment Handbook,*  
<http://www.niaaa.nih.gov/publications/instable.htm>
- CYT: [www.chestnut.org/li/cyt/findings](http://www.chestnut.org/li/cyt/findings)
- NCADI: [www.health.org](http://www.health.org)
- PETSA: [www.samhsa.gov/centers/csat/csat.html](http://www.samhsa.gov/centers/csat/csat.html)  
(then select PETS from program resources)
- Society for Adolescent Substance Abuse Treatment Effectiveness (SASATE) list server  
(e-mail [LCalhoun@hq.row.com](mailto:LCalhoun@hq.row.com) )

# Contact Information



**Michael L. Dennis, Ph.D., Senior Research Psychologist**  
Lighthouse Institute, Chestnut Health Systems  
720 West Chestnut, Bloomington, IL 61701  
Phone: (309) 827-6026, Fax: (309) 829-4661  
E-Mail: [Mdennis@Chestnut.Org](mailto:Mdennis@Chestnut.Org)