Truth or consequences: The implications of adolescents' inconsistent self-report of risk behaviors

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Outline

- Prevalence change.
- Measure inconsistency, and find factors predicting inconsistency.
- In the paper: estimate error due to inconsistency.

Risk behavior survey data is unreliable

- Surveys primary or sole source of risk behavior data.
- Adolescents over- or under-report true risk behaviors.
- Few strategies for inconsistency; researchers cite reliability studies perfunctorily.

Two week test-retest: pregnancy history

Have you ever been pregnant or made another pregnant? (n=4628)

		Week 2		
		Preg, %	Not preg, %	Total, %
Week 0	Preg, %	5	4	9
	Not preg, %	3	88	91
	Total, %	8	92	100

In two weeks,

- 3% of the sample became pregnant or made another pregnant.
- 4% of the sample forgot having been pregnant or made another pregnant.

Data: two-week reliability test of YRBS

- Convenience sample of 4600 high school students: geographically diverse, but not representative.
- Respondents answered 100 questions from the Youth Risk Behavior Survey (YRBS) two weeks apart in classrooms.
- This study uses contingency tables from YRBS reliability study. CDC publishes only sample size n, prevalence at each survey administration (p_1, p_2) and kappa κ. Error is no more than 1 respondent.

Data analysis

- Assess prevalence change with McNemar.
- Measure inconsistency as tetrachoric correlation (TCC); independent of prevalence so different questions can be compared.
  - TCC can be interpreted like usual correlation: 0% chance agreement; 100% perfect agreement.
- Find factors associated with inconsistency in linear regression with outcome TCC.

Potential reasons for inconsistency

True change, memory

Low literacy

Illegal act

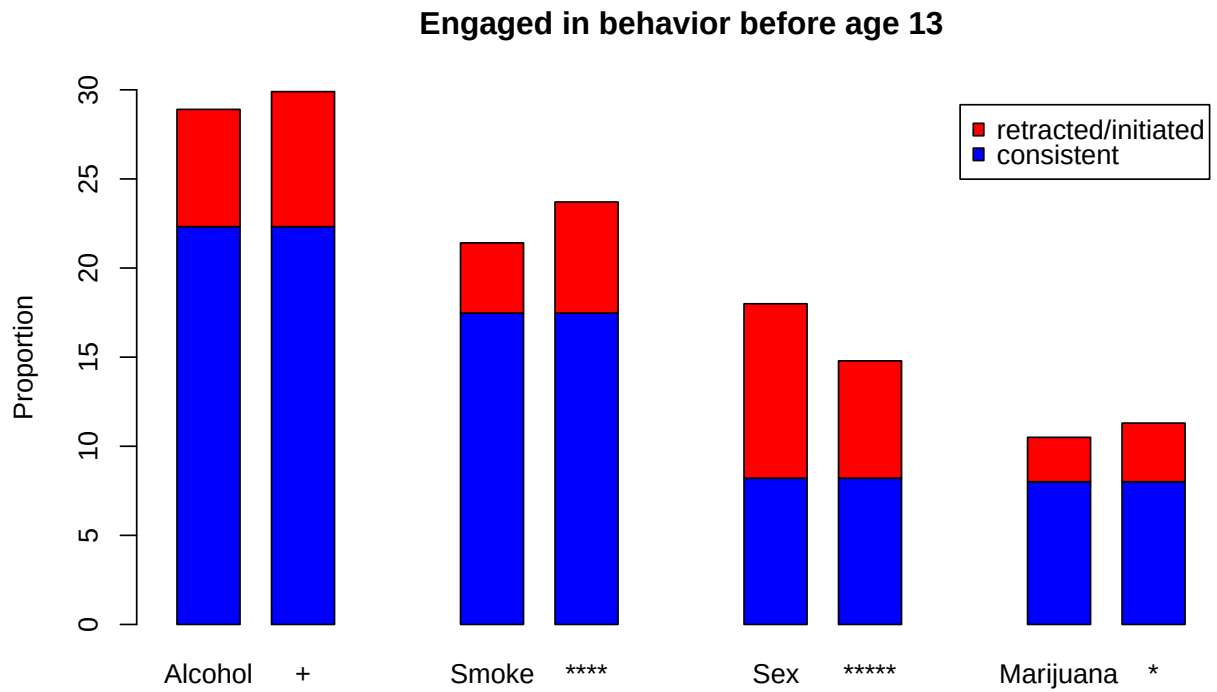
Stigma

Reevaluate question

Potential reasons for inconsistency

True change, memory	Time-frame: lifetime, past year past month, unspecified
Low literacy	Question number, word count Prior question different
Illegal act	Crime against a person Drug illegal for all Drug illegal for minors
Stigma	Victim of crime Mental disorder symptom Weight control
Reevaluate question	

Engaged in behavior before age 13



$+\ p \leq 0.10$ Alcohol

$^{*}p \leq 0.05$ Marijuana

$^{**}p \leq 0.01$

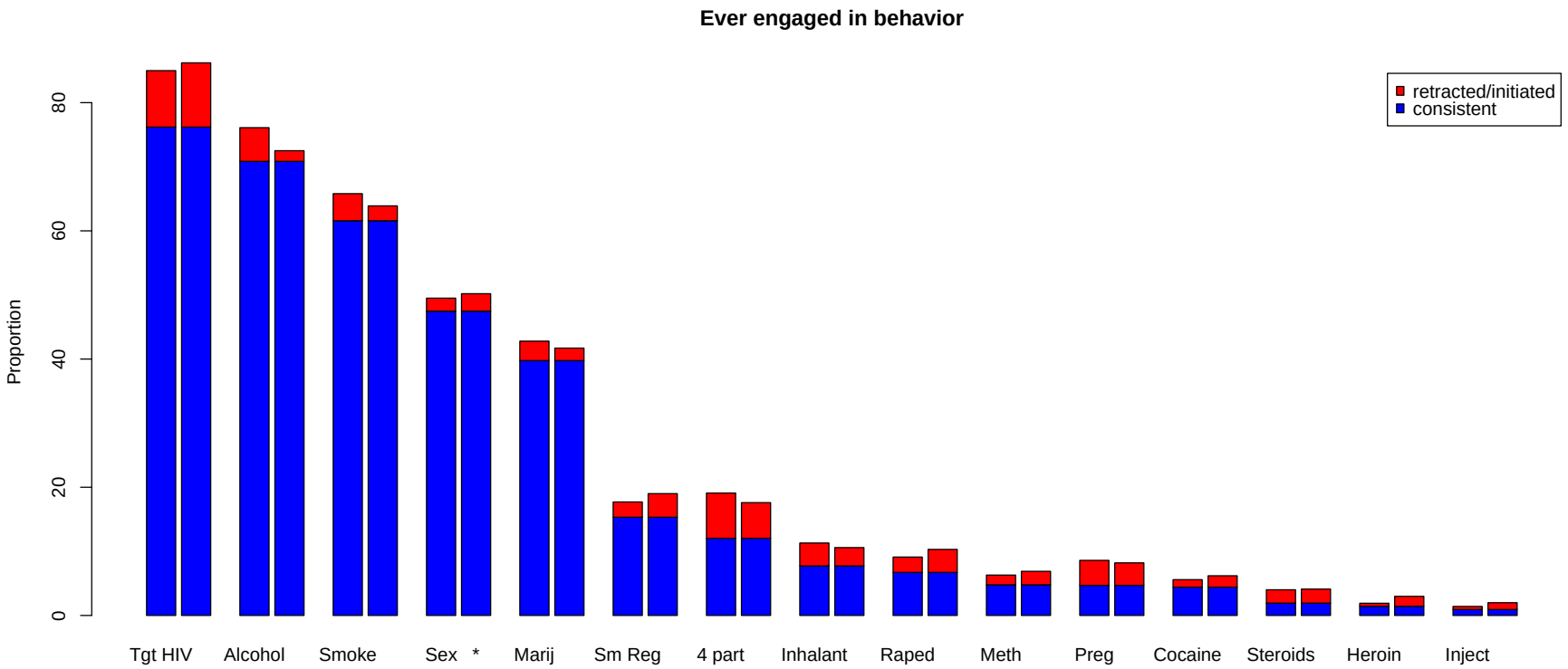
$^{***}p \leq 0.001$

$^{****}p \leq 0.0001$ Tobacco Sex

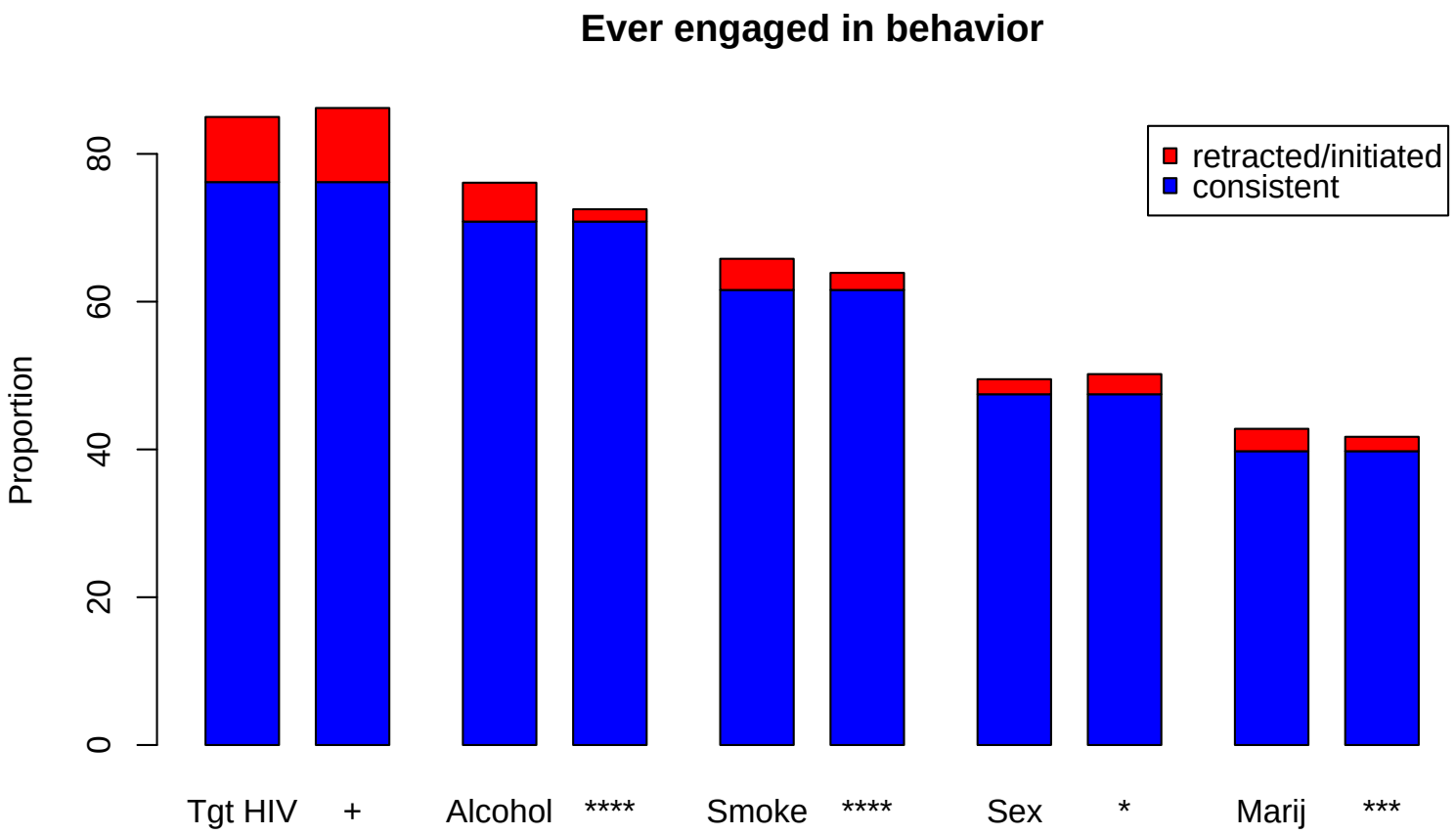
p-values from McNemar test.

“Ever” engaged in behavior

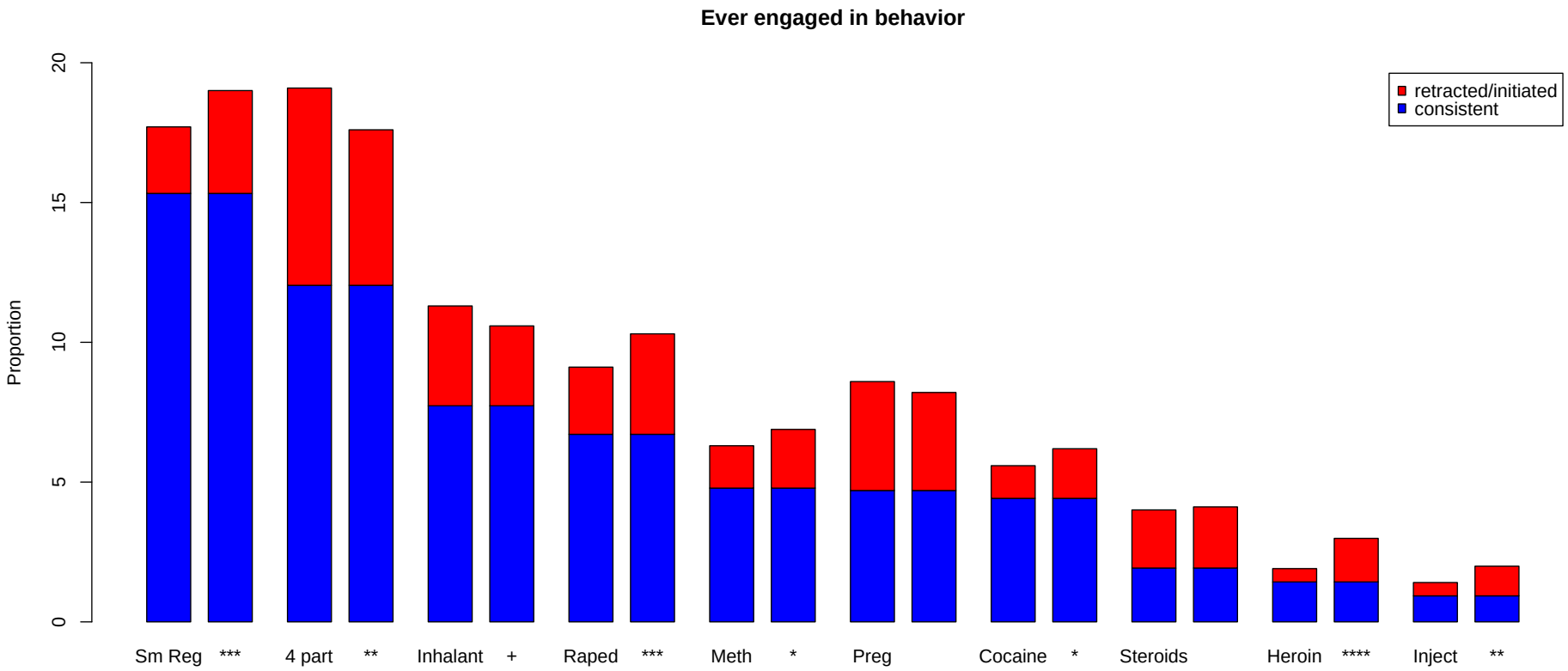
Prevalence of 11 of 15 behaviors change in 2 weeks.



High prevalence “ever” questions



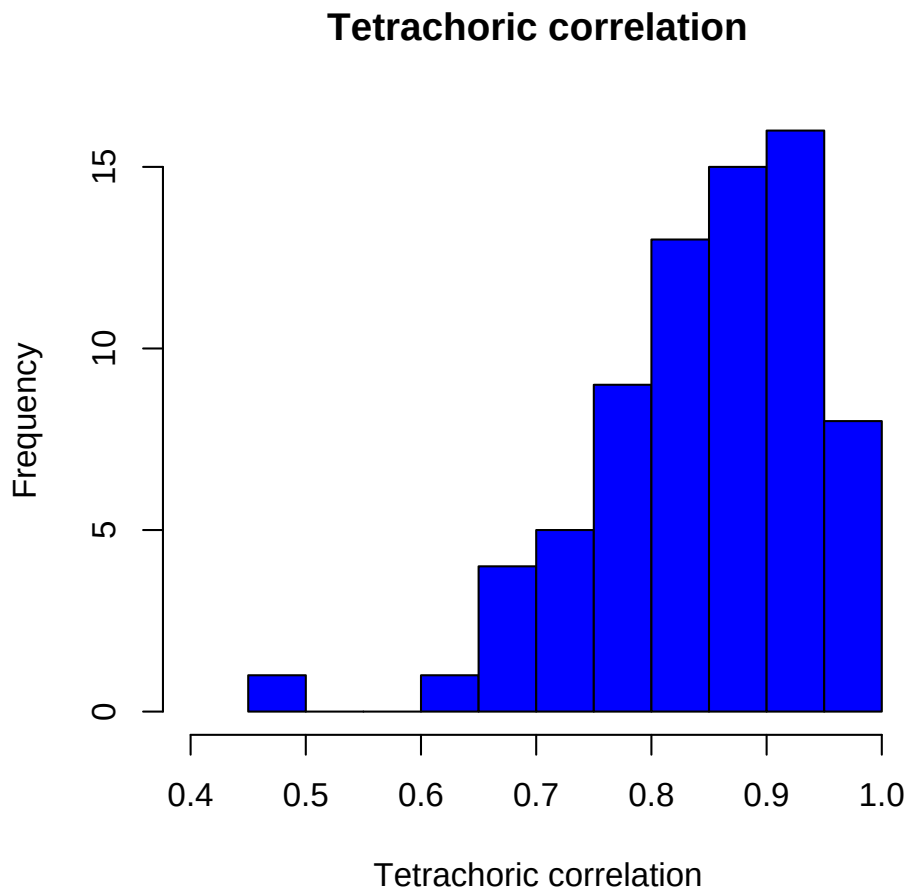
Low prevalence “ever” questions



Prevalence change

- Prevalence of 41 of the 72 behaviors change at 0.05 level.
- Decrease in lifetime incidence is impossible, but occurred for 5 behaviors.
- Increase in behaviors implies high two week incidence: e.g., half of heroin users started in the past 2 weeks.
- No pattern for prevalence change.

Agreement between waves



Agreement (TCC) by time-frame

	Ever	Past 30 days	Before Age 13	Past 30 days at school
Marijuana	0.99	0.94	0.93	0.88
Cigarettes	0.98	0.96	0.91	0.93
Alcohol	0.97	0.90	0.87	0.83
Sex	0.99	0.91	0.66	
Inhalants	0.91	0.79		
Cocaine	0.95	0.84		

(Sex: Past 3 months, not 30 days.)

Agreement by question topic

Question topic	Average TCC	se	p
Sexual intercourse	0.950	0.064	*
Tobacco	0.913	0.033	**
Alcohol	0.892	0.044	.
Illegal drugs	0.882	0.031	*
Weight control	0.740	0.038	*
All questions	0.817	0.016	

* $p \leq 0.1$, ** $p \leq 0.01$, *** $p \leq 0.001$, **** $p \leq 0.0001$
Linear regression $R^2 = 0.32$

TCC is measured on a scale from 0.0 chance agreement to 1.0 perfect agreement.

Limitations

- No measure of inconsistency is both intuitive and independent of prevalence.
- Full data is unavailable, so cannot look for correlations between inconsistency.
- Sample is diverse, but not representative of the population.

Reliability and inconsistency

- Majority of YRBS questions change prevalence in 2 weeks: retest effect.
- Less inconsistency among tobacco, drug use, sex; more inconsistency among weight control.
- Validity of weight control questions should be investigated to improve obesity studies.

Appendix

APPENDIX

Sample characteristics vs. YRBS 1999

	Sample (n=4619)	YRBS99 (n=15 349)
Gender		
Male	46.6	50.4
Grade		
9	30.6	28.9
10	31.8	26.0
11	21.9	23.6
12	15.7	21.4
Race or ethnicity		
White, non-Hispanic	52.2	60.8
Black, non-Hispanic	31.4	14.1
Hispanic, any race	6.1	10.4
Other	10.3	14.7

Sample characteristics vs. YRBS 1999, cont.

	%, Sample (n=4619)	%, YRBS99 (n=15349)
Age (yrs)		
≤ 13	0.1	1.6
14	12.4	17.4
15	28.9	24.0
16	28.5	24.5
17	21.2	22.3
≥ 18	8.9	10.3

May not add to 100% due to rounding.

Agreement (TCC) by time-frame

TCC (standard error).

	Ever	Past 30 days (Sex: 3 mos)	Before Age 13	Past 30 days at school
Marijuana	0.99 (0.002)	0.94 (0.006)	0.93 (0.009)	0.88 (0.02)
Cigarettes	0.98 (0.003)	0.96 (0.004)	0.91 (0.008)	0.93 (0.008)
Alcohol	0.97 (0.003)	0.90 (0.01)	0.87 (0.01)	0.83 (0.02)
Sex	0.99 (0.001)	0.91 (0.007)	0.66 (0.02)	
Inhalants	0.91 (0.01)	0.79 (0.03)		
Cocaine	0.95	0.84		