

# Socialization influences response to motivational enhancement for smoking cessation among HIV+ smokers

Raymond Niaura, PhD<sup>1</sup>, Cassandra Stanton, PhD<sup>2</sup>, Marcel DeDios, PhD<sup>2</sup>, Karen Tashima, MD<sup>2</sup>

<sup>1</sup> Schroeder Institute for Tobacco Research & Policy Studies, Legacy;

<sup>2</sup> Alpert Medical School of Brown University

PRESENTED AT:  
SRNT 2011 ANNUAL MEETING  
TORONTO, ON, CANADA

- Supported in part by: grant R01-DA12344 from the National Institute of Drug Abuse (R. Niaura), grant K07-CA95623 from the National Cancer Institute (C. Stanton), an NIH-funded Transdisciplinary Tobacco Use Research Center (TTURC) Award (P50 CA084719), an NIH-funded Lifespan/Tufts/Brown Center for AIDS Research Award (P30 AI42853), and by the Robert Wood Johnson Foundation.
- Competing interests: None

## Positive Paths:

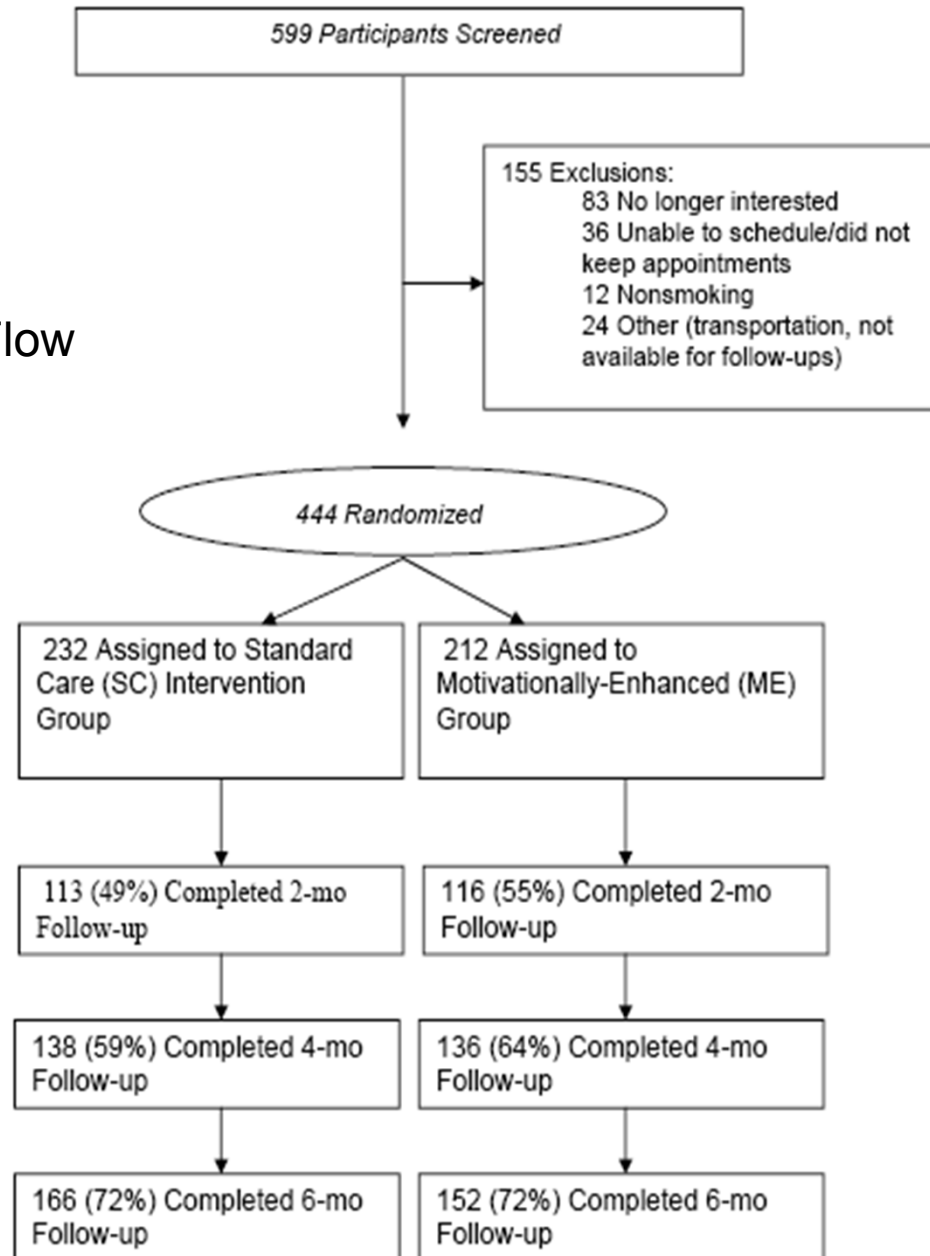
- A Motivational Intervention for Smoking Cessation among HIV+ Smokers
- RCT designed to assess whether adding a motivational enhancement intervention to nicotine replacement therapy (NRT) would increase cessation compared to usual care

*Lloyd-Richardson EE, Stanton CA, Papandonatos GD, Shadel WG, Stein M, Tashima K, Flanigan T, Morrow K, Neighbors C, Niaura R. Motivation and patch treatment for HIV+ smokers: a randomized controlled trial. Addiction 2009 Nov;104(11):1891-900.*

**Figure 2.** Participant flow through the screening, randomization, and follow-up processes.

Study Design and Flow

Two interventions



- **Standard of Care:** Two brief sessions (3-4 mins) including assessment of quitting plans, self-help quitting materials
- **Motivational Enhancement:** 4 intervention sessions (30mins: feedback with CO measurements, personal responsibility for change, goal setting, empathy and self efficacy reinforcement) plus quit day phone call
- *All study subjects:* brief cessation advice from their physician and 8 weeks of nicotine patches if they set a quit date

## Abstinence rates (%) using Intent-to-Treat (ITT) Analyses: 2-month, 4-month, and 6-month differences by treatment arm.

ITT Abstinence Rates (%)	Time		
	2m	4m	6m
All	12	10	9
Motivation	12	9	9
Standard	13	10	10
p-value	0.72	0.76	0.76

- Note: Abstinence based on 24-hour biochemical verification of self-reported 7-day quit status.
- Column p-values test between-condition differences at each time point.

Does socialization influence response to treatment?

- Undersocialized smokers may respond more poorly overall (covariate).
- Undersocialized smokers may respond differentially to Standard Care vs. Motivation Enhanced (effect modifier).

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## What is Socialization?

Assessed via the California Psychological Inventory Socialization Scale (CPI-So; Gough, 1994)

Interactional theory of psychopathy; clinical lore and commonsense observations about the beliefs and attitudes of sociopathic individuals.

“...a sociological continuum going from persons of exemplary probity and rectitude at one pole, through persons of ordinary norm observing propensities, to persons of frankly errant and rule-violating dispositions at the other pole.”

*Gough HG. Theory, development, and interpretation of the CPI socialization scale. Psychol Rep. 1994 Aug;75(1 Pt 2):651-700.*

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## What is Socialization?

### *High Scores:*

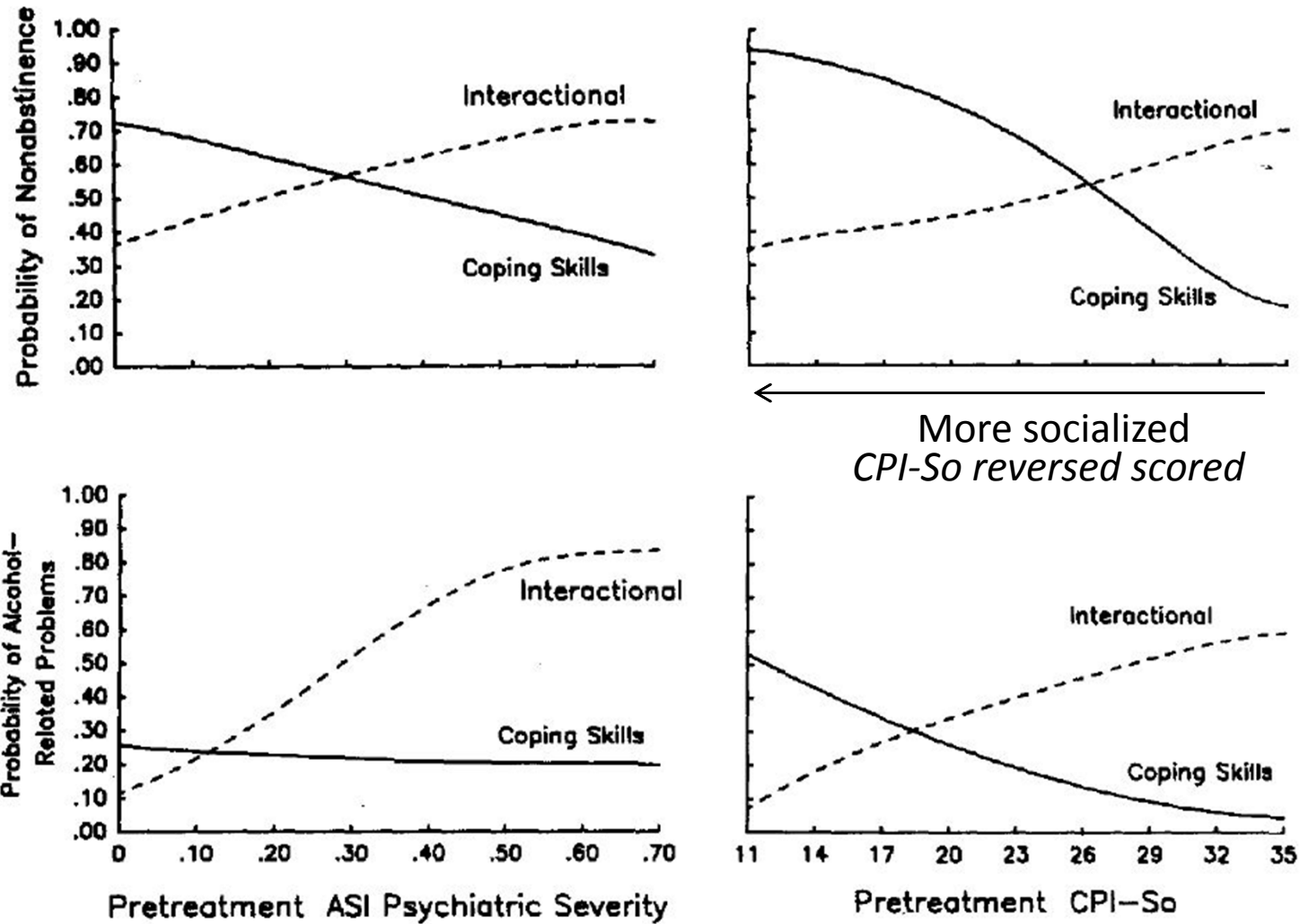
Norm observing, prosocial, conscientious, moral, reliable, rule observing, emotionally stable, mature, friendly, agreeable, absence of aggression, impulsivity, hostility, ability to envisage future goals

### *Low Scores:*

Alcoholics, prison inmates, juvenile delinquents, pathological gamblers, heroin users, alcoholics

*No Relationship:* SES, ethnicity, intellectual ability

# CPI Socialization and Alcohol Treatment Outcomes



Kadden RM, Cooney NL, Getter H, Litt MD. Matching alcoholics to coping skills or interactional therapies: posttreatment results. *J Consult Clin Psychol.* 1989 Dec;57(6):698-704.

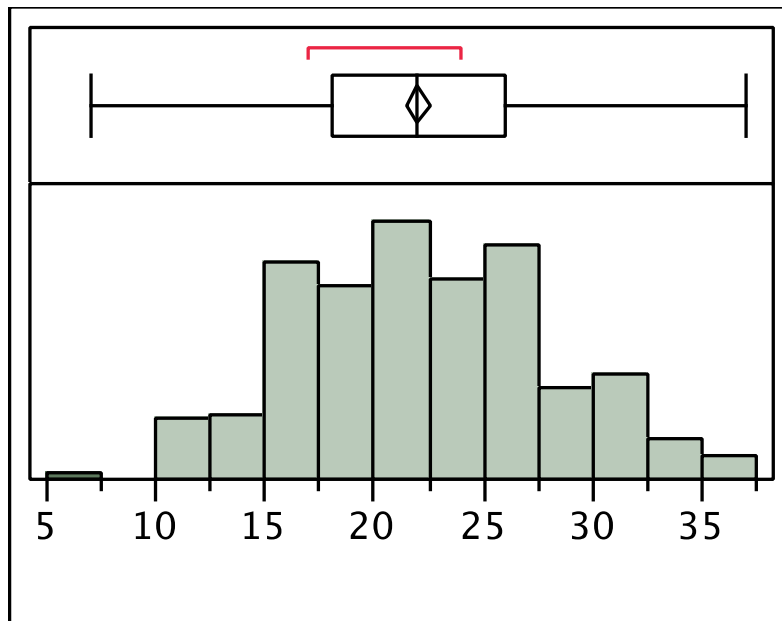
- Physician referral from 8 outpatient clinics in Southeastern New England
- $\geq$  age 18
- HIV positive
- $\geq$  5 cigarettes per day
- Not pregnant
- No nicotine patch contraindications (unstable hypertension or skin disease)
- Willing to attend up to four intervention sessions

## Baseline Characteristics (N=444)

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- Mean age 42 years;
- 63% male;
- 52% European American, 16% Hispanic, 18% African American;
- 78% unemployed;
- 46% single
- Cigarettes per day: 18
- Previous patch use: 68%
- FTND: 5.91

# CPI- So Baseline score



Mean	21.993228
Std Dev	5.6362153
Std Err Mean	0.2677847
N	443
Variance	31.766922
Skewness	0.1734214
Kurtosis	-0.369803

## CPI-So and Dependence, Motivation, Depression, Stress

	CPISTOT	TOTFAG	LADDER	CESDTOT	PSSTOT
CPISTOT	1.0000	-0.2857	-0.0528	-0.4168	-0.3930
TOTFAG	-0.2857	1.0000	0.0750	0.1541	0.1082
LADDER	-0.0528	0.0750	1.0000	0.0808	0.0170
CESDTOT	-0.4168	0.1541	0.0808	1.0000	0.6214
PSSTOT	-0.3930	0.1082	0.0170	0.6214	1.0000

CPI-So not associated with gender, age, education, ethnicity

## Whole Model Test

Model	-LogLikelihood	DF	ChiSquare	Prob>ChiSq
Difference	10.35643	7	20.71286	0.0042*
Full	210.94787			
Reduced	221.30430			

RSquare (U)	0.0468
AICc	438.249
BIC	470.16
Observations (or Sum Wgts)	417

Measure	Training	Definition
Entropy RSquare	0.0468	$1 - \text{Loglike}(\text{model}) / \text{Loglike}(0)$
Generalized R-Square	0.0741	$(1 - (L(0)/L(\text{model}))^{2/n}) / (1 - L(0)^{2/n})$
Mean -Log p	0.5059	$\sum -\text{Log}(p[j]) / n$
RMSE	0.4054	$\sqrt{\sum (y[j] - \rho[j])^2 / n}$
Mean Abs Dev	0.3290	$\sum  y[j] - \rho[j]  / n$
Misclassification Rate	0.2206	$\sum (p[j] \neq \rho_{\text{Max}}) / n$
N	417	n

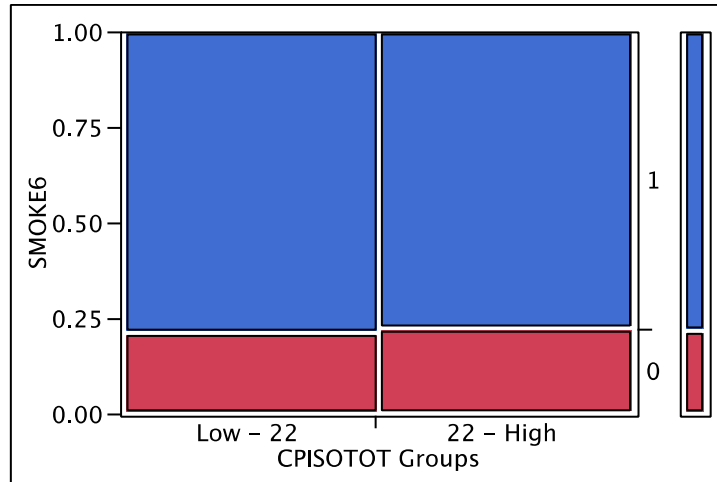
## Parameter Estimates

Term	Estimate	Std Error	ChiSquare	Prob>ChiSq	Lower 95%	Upper 95%
Intercept	-0.5737327	0.7315098	0.62	0.4329	-2.019111	0.85869949
GROUP[Standard Care]	-0.0140391	0.1274803	0.01	0.9123	-0.264023	0.23723246
TOTFAG	-0.2099864	0.0657837	10.19	0.0014*	-0.3408705	-0.0821648
GROUP[Standard Care]*(TOTFAG-6.72422)	-0.0478791	0.0657837	0.53	0.4667	-0.1775421	0.08123508
CPISOTOT	0.03165064	0.0226924	1.95	0.1631	-0.0128737	0.07634232
GROUP[Standard Care]*(CPISOTOT-21.9544)	-0.045415	0.0226924	4.01	0.0454*	-0.0904506	-0.0012511
(TOTFAG-6.72422)*(CPISOTOT-21.9544)	0.00807874	0.0111871	0.52	0.4702	-0.0135666	0.0304969
GROUP[Standard Care]*(TOTFAG-6.72422)*(CPISOTOT-21.9544)	-0.0078929	0.0111871	0.50	0.4805	-0.0299052	0.01418556

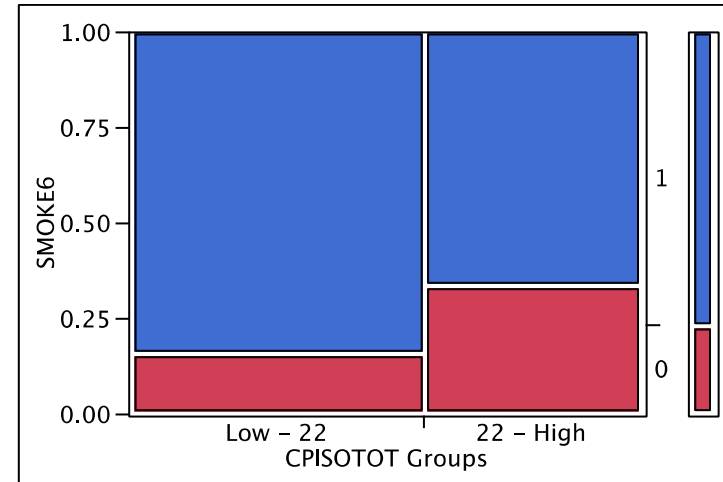
For log odds of 0/1

# Smoking (6-month) % by CPI-So Group

## Standard Care



## Motivation Enhanced



Count	0	1	
Total %			
Col %			
Row %			
<b>Low - 22</b>	25 10.78 49.02 <b>21.55</b>	91 39.22 50.28 78.45	116 50.00
<b>22 - High</b>	26 11.21 50.98 <b>22.41</b>	90 38.79 49.72 77.59	116 50.00
	51 21.98	181 78.02	232

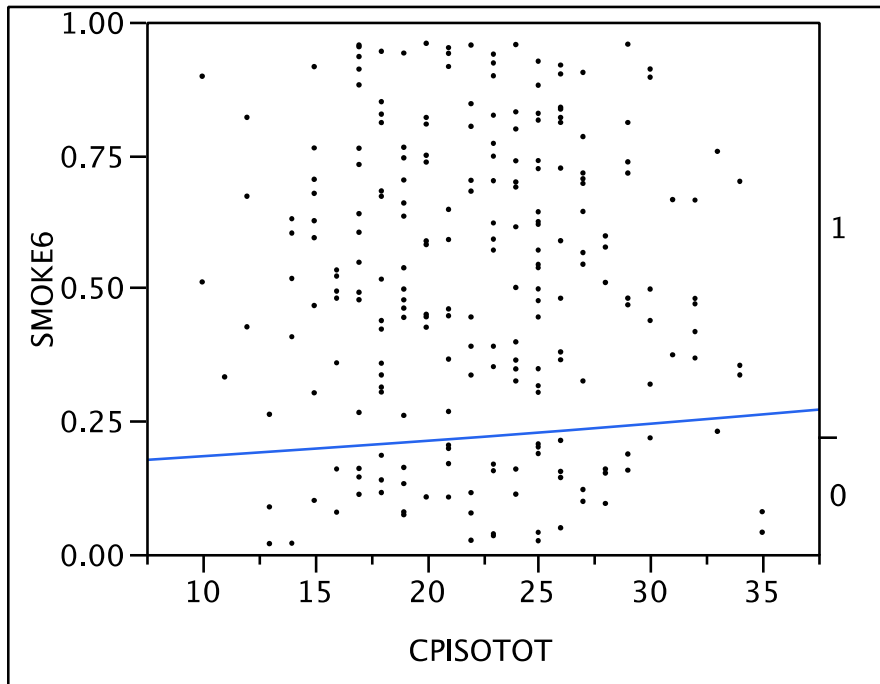
Count	0	1	
Total %			
Col %			
Row %			
<b>Low - 22</b>	19 9.00 38.78 <b>15.57</b>	103 48.82 63.58 84.43	122 57.82
<b>22 - High</b>	30 14.22 61.22 <b>33.71</b>	59 27.96 36.42 66.29	89 42.18
	49 23.22	162 76.78	211

**ChiSquare**   **Prob>ChiSq**  
 Pearson   0.025   0.8740  
**Odds Ratio**   **Lower 95%**   **Upper 95%**  
 0.950972   0.510786   1.770501

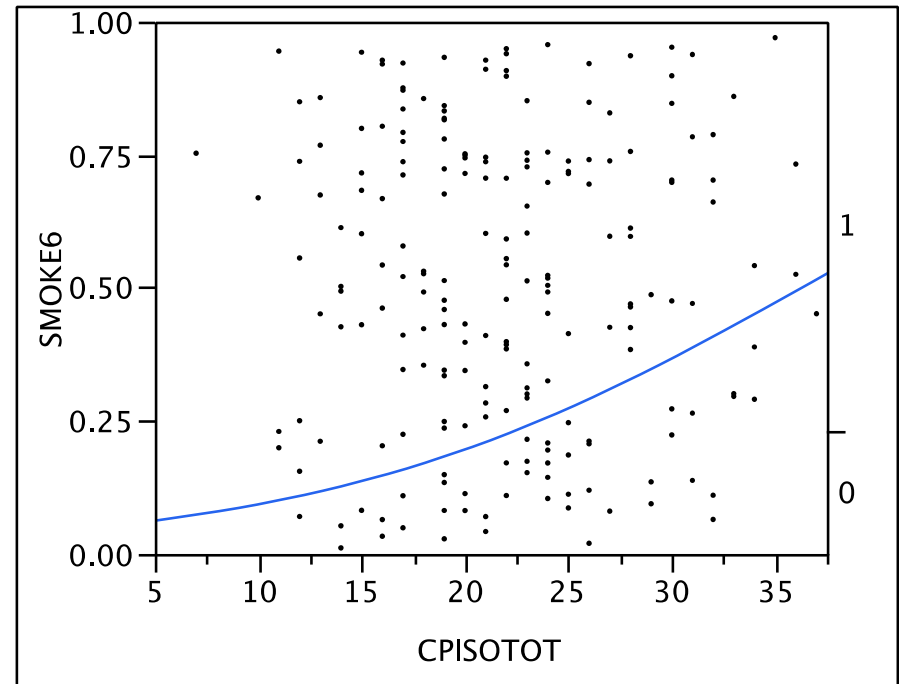
**ChiSquare**   **Prob>ChiSq**  
 Pearson   9.491   0.0021\*  
**Odds Ratio**   **Lower 95%**   **Upper 95%**  
 0.362783   0.187927   0.700333

# Smoking Probability and CPI Socialization Logistic Plots

Standard Care



Motivation Enhanced



**Unit Odds Ratio:** Per unit change in regressor

OR	Lower 95%	Upper 95%
1.02	0.96	1.08

OR	Lower 95%	Upper 95%
1.09	1.03	1.15

**Range Odds Ratio:** Per change in regressor over entire range

OR	Lower 95%	Upper 95%
1.58	0.36	7.02

OR	Lower 95%	Upper 95%
13.45	2.65	73.37

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ME = SC: No treatment main effect

Me > SC: Only for more highly socialized smokers

Highly socialized smokers more apt to respond to ME or extended interpersonal therapy/interaction.

Less socialized smokers may be less able to benefit from interactional processes; deficits in future planning?

Implications for treatment: Tailoring, extra-corporeal interaction treatments (phone, web, email).



Thanks to our study participants in  
southeastern New England

Colleagues: Elizabeth Lloyd-Richardson, Beth  
Bock, Mike Goldstein, Patrick Sweeney, Mark  
Fagan, Tim Flanigan, Bill Shadel, Dave Abrams,  
Munawar Azam, George Papandonatos