

Michigan Center for Health Communications Research

Presented by:

Victor J. Strecher, PhD, MPH

Principal Investigator

OUR GOAL

The goal:



High
efficacy

Cost

High
reach

The diagram features a central blue rectangle labeled 'eHealth'. To its left is a yellow arrow pointing left, labeled 'High efficacy'. To its right is a green arrow pointing right, labeled 'High reach'. Below the blue rectangle is a red arrow pointing down, labeled 'Cost'. The background is a dark, textured grey.

High
efficacy

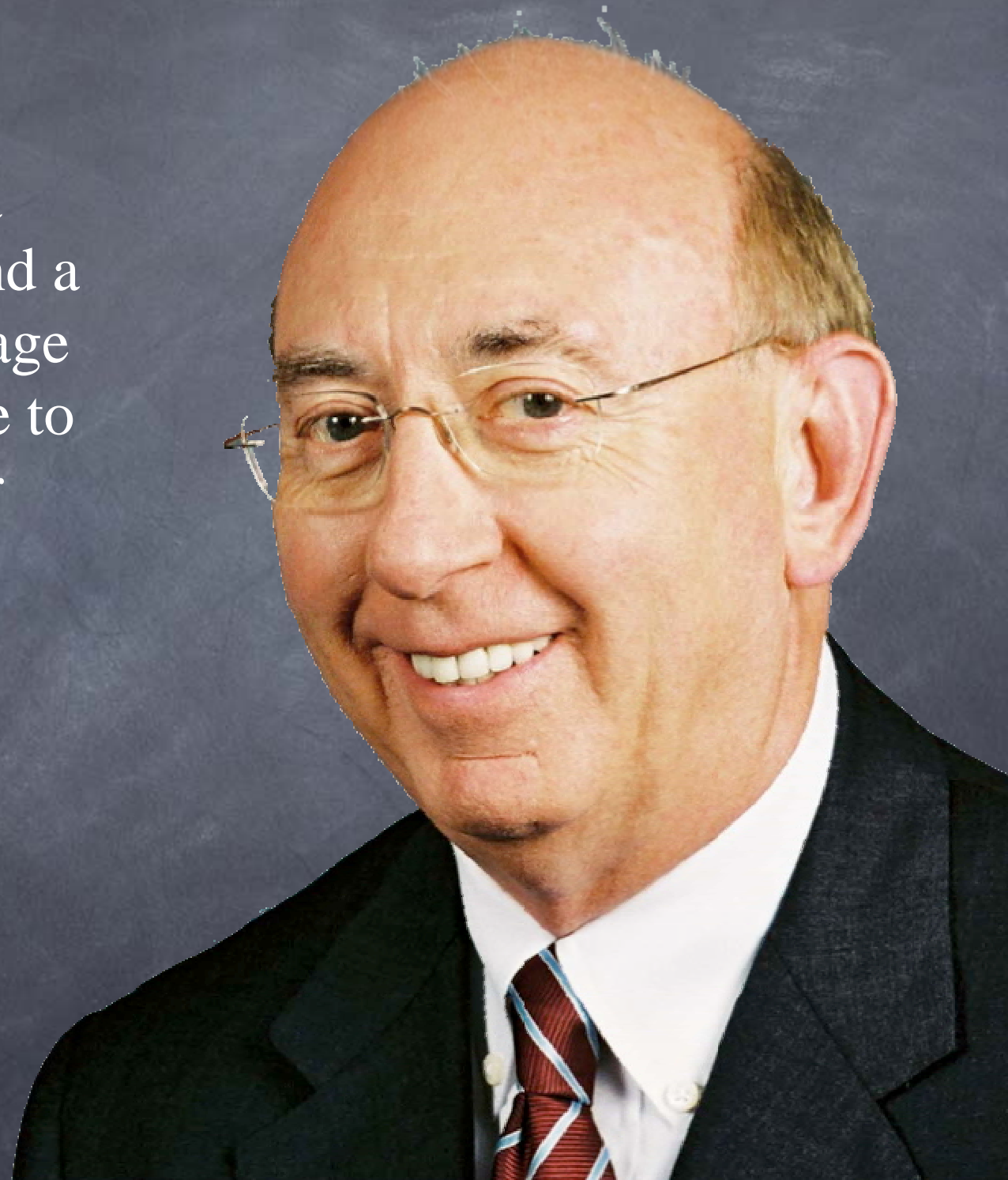
eHealth

High
reach

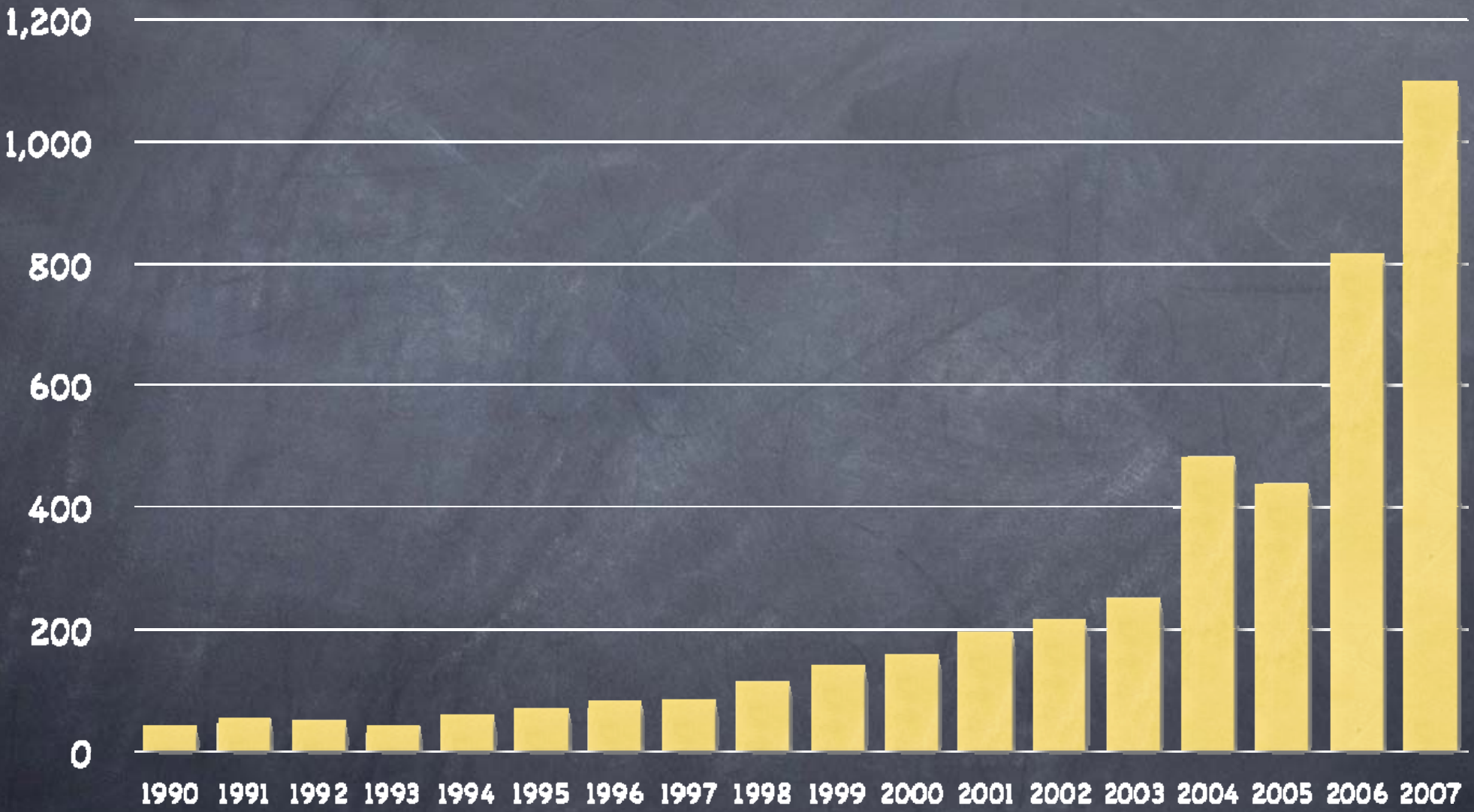
Cost

“We are truly entering a new age of discovery and a new age of therapy: an age in which we will be able to **specifically tailor** our prevention and our treatment for each individual patient.”

John E. Niederhuber
Director, NCI



Number of peer-reviewed publications with the terms “tailored” and “behavior” from 1990 to 2007. (Source: PubMed)



Demographics



Social Environment



Motives



Barriers



Coping strategies



Data

red

blue

aqua,
gray

orange

Tailored Message





SESSION 1

SESSION 2

SESSION 3

SESSION 4

SESSION 5

SESSION 6

**SPECIAL
FEATURE**

**USING YOUR
PATCHES**



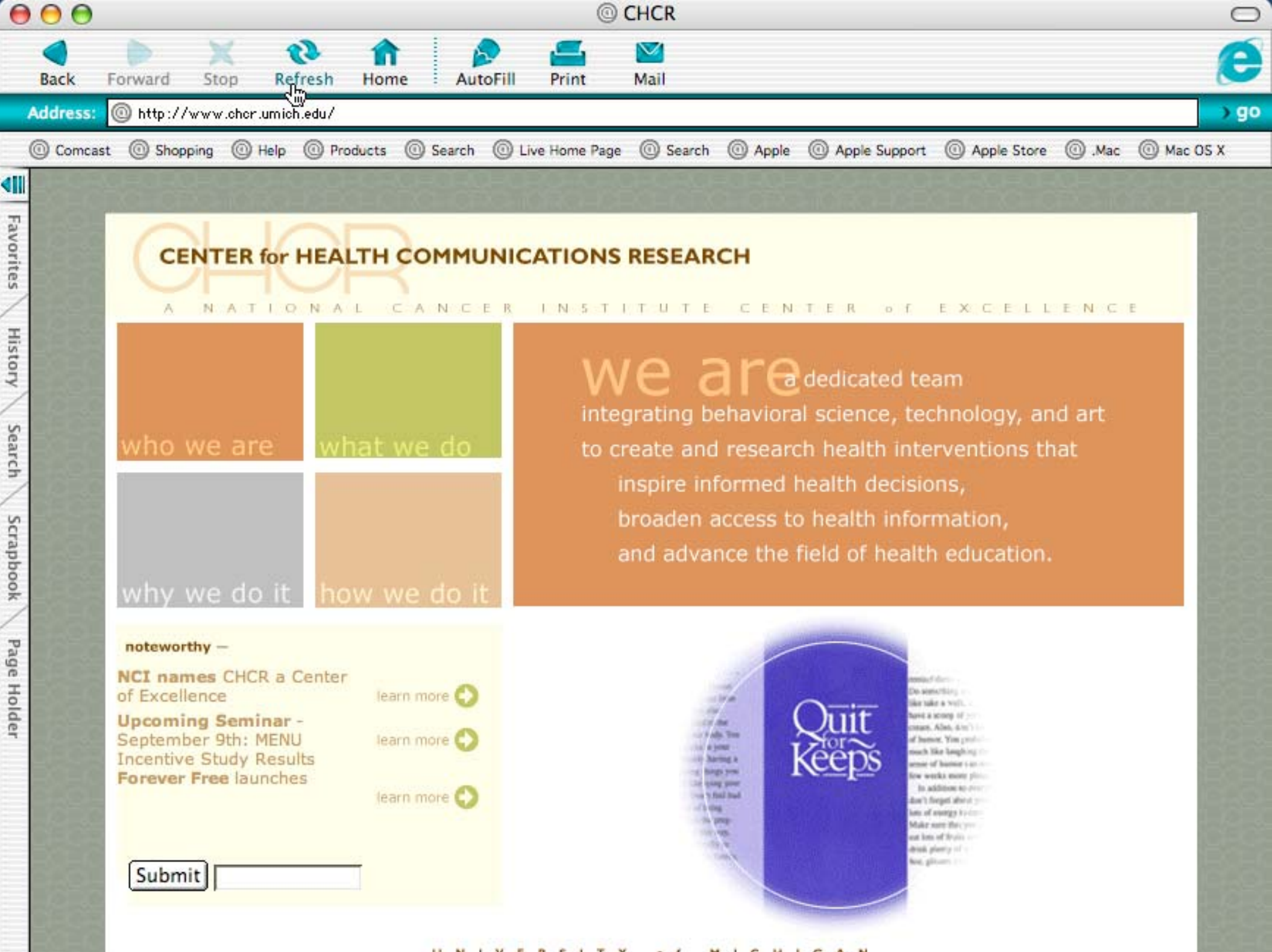
HOW WAYNE FOUND SUPPORT

Daloris and I hosted the most incredible dinner party. There must have been over 20 people at the place that night. Everyone we spend a lot of time with was in our home. There was enough food to feed an army. The place smelled delicious. Friends were spread out everywhere. A few were in the living room talking and laughing, some in the kitchen enjoying the snacks, while others were walking up and down the hallway by the bedrooms checking out the wall of framed photos. The house had never felt so homey and full of life.

As soon as I felt like everyone was there, including my pal Rob, I took a deep breath and asked everyone to join me in the living room for an important announcement. As I stood there looking at everyone, I knew I had made the right decision to do this. With a big smile on my face, I told my friends that I had quit smoking and that this party was in celebration of my decision. I then told them that the reason they were all there was because I couldn't think of a better group of people who would help me through this process. I stopped talking. The room

[< Start of Session](#)

[What Also Helped Wayne](#)



CHCR

CENTER for HEALTH COMMUNICATIONS RESEARCH

A NATIONAL CANCER INSTITUTE CENTER of EXCELLENCE

who we are

what we do

why we do it

how we do it

we are a dedicated team integrating behavioral science, technology, and art to create and research health interventions that inspire informed health decisions, broaden access to health information, and advance the field of health education.

noteworthy —

NCI names CHCR a Center of Excellence [learn more](#)

Upcoming Seminar - September 9th: MENU Incentive Study Results [learn more](#)

Forever Free launches [learn more](#)

Submit



Do something... like take a walk... have a string of... stress. Also, don't... of home. You... much like laughing... some of home... few weeks more... In addition to... don't forget about... lots of energy to... Make sure the... eat lots of fruits... about plenty of... has, given...

WHAT WE DO

exposure

motives

active

framing
ingredients

goals

culture

graphic elements

expert or user
navigation

tailoring depth

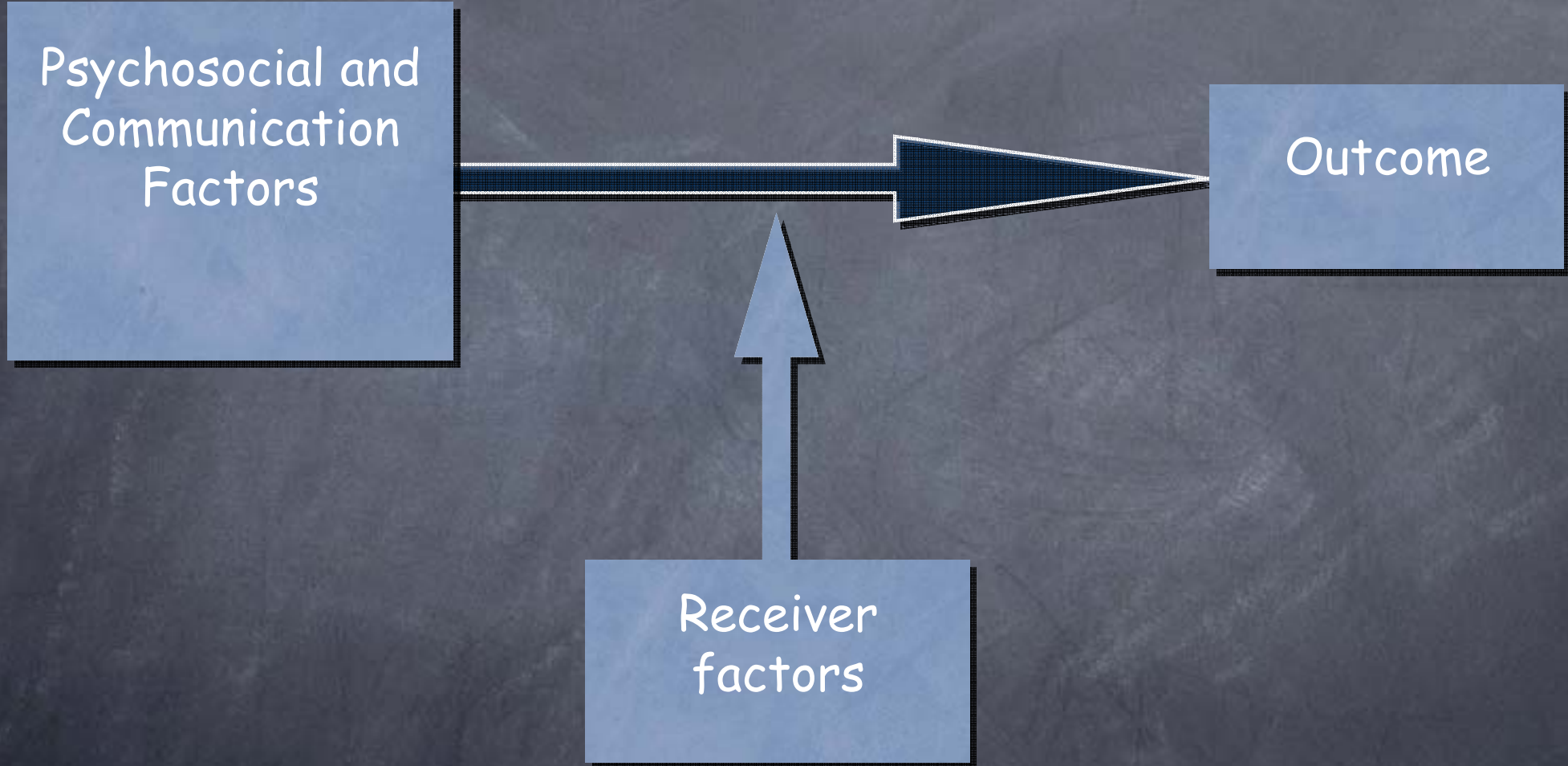
testimonials

receiver

source

message

Black Box

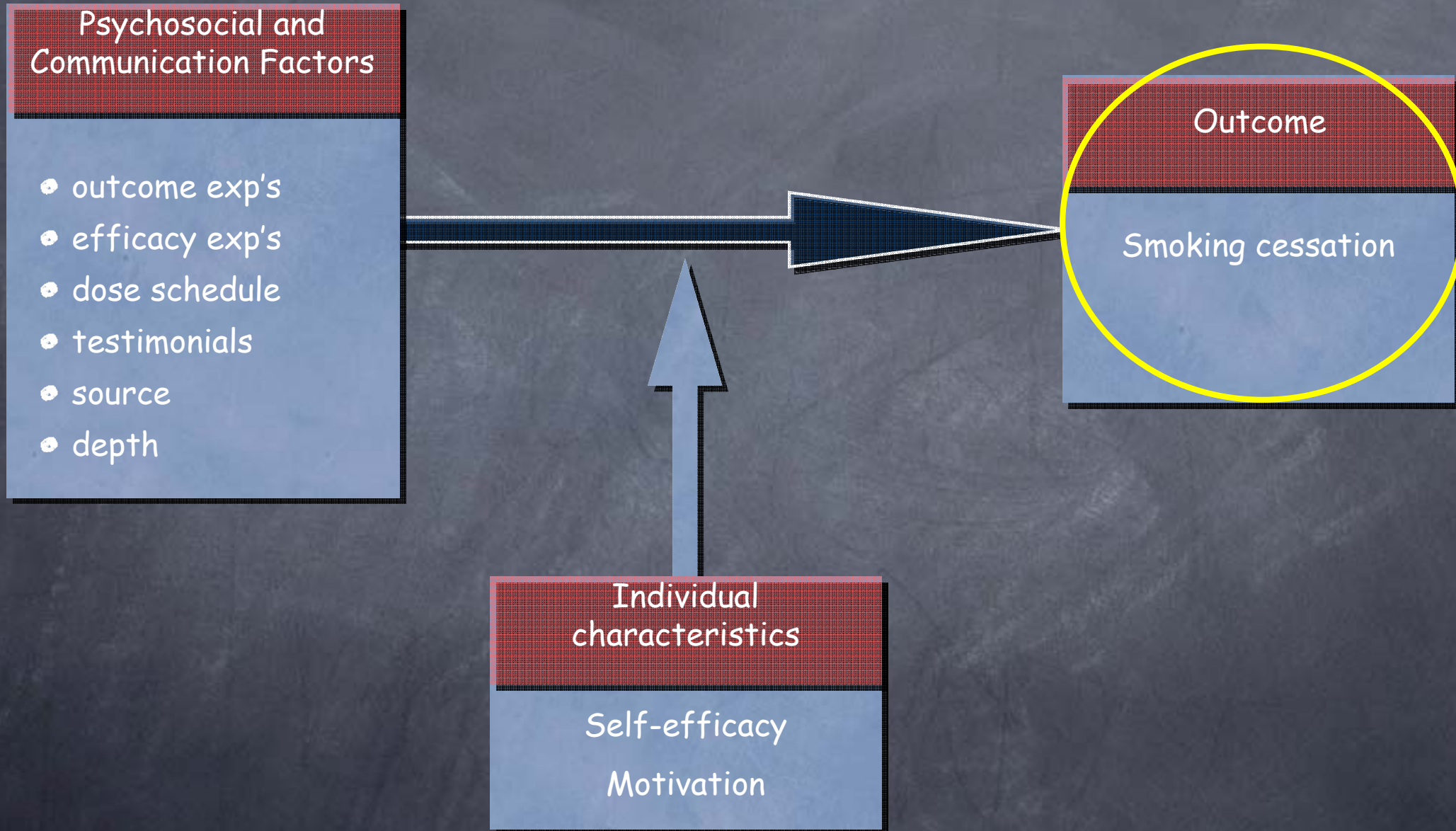


Psychosocial and
Communication
Factors

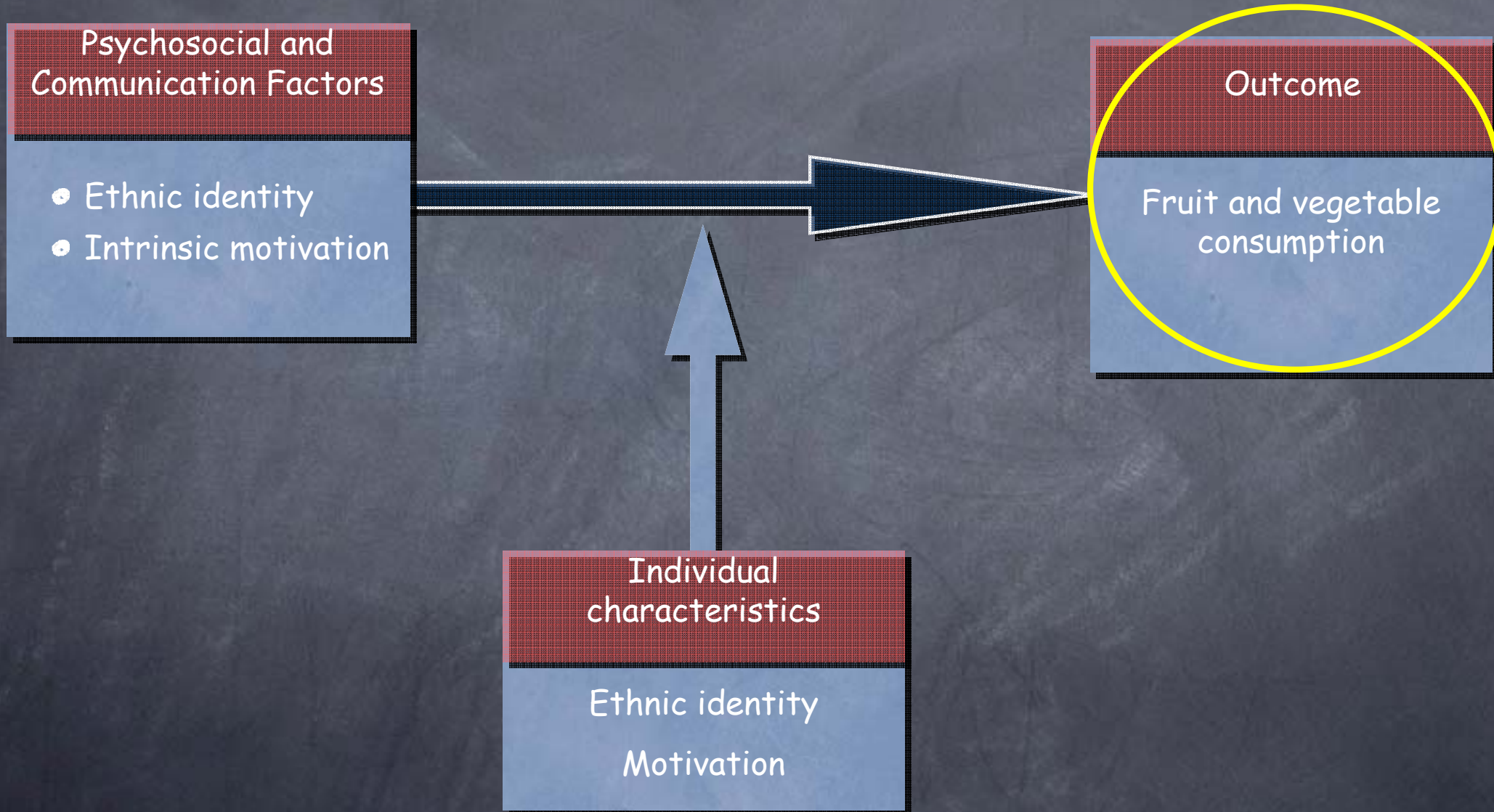
Outcome

Receiver
factors

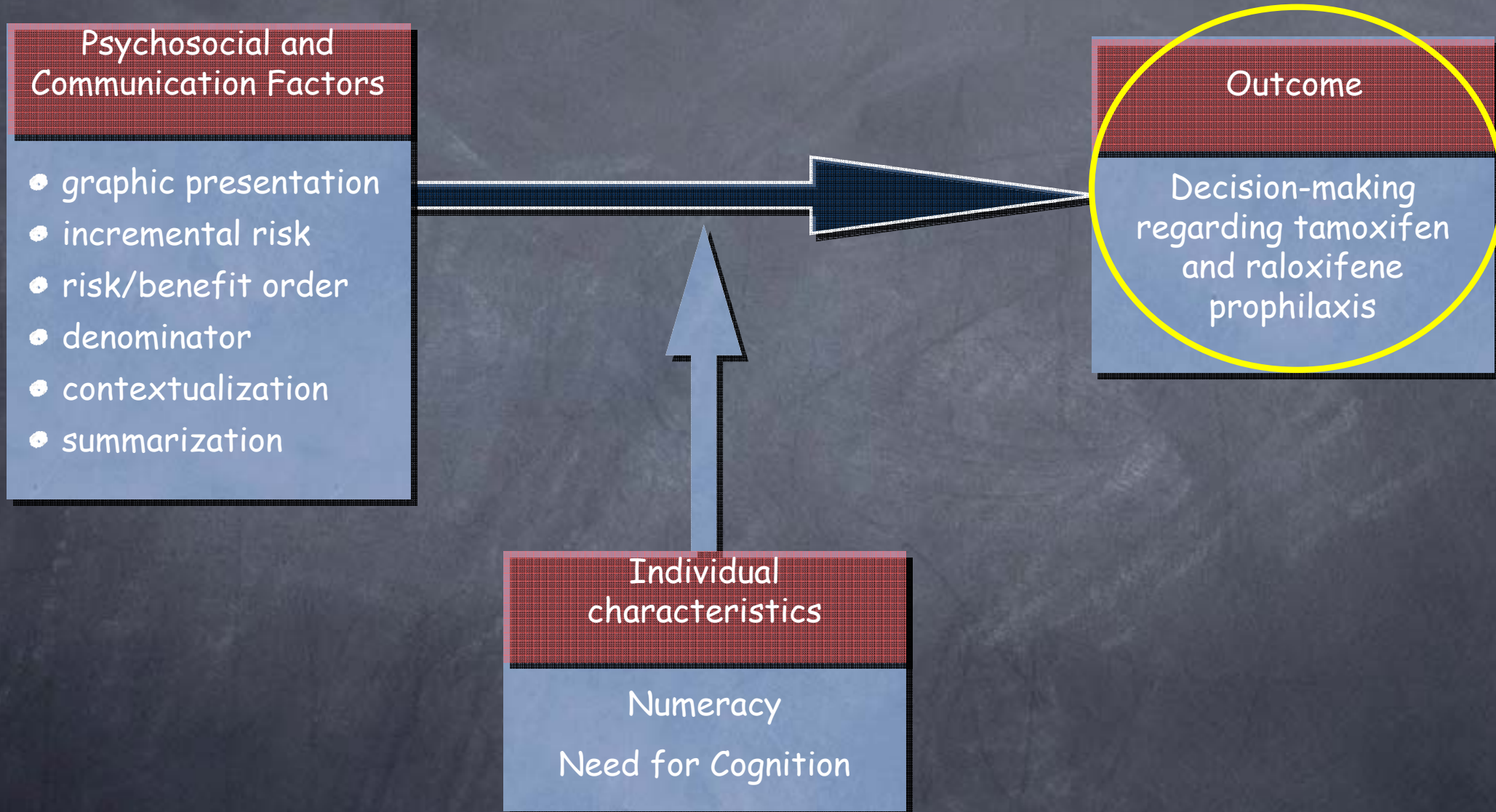
PROJECT QUIT (Strecher)



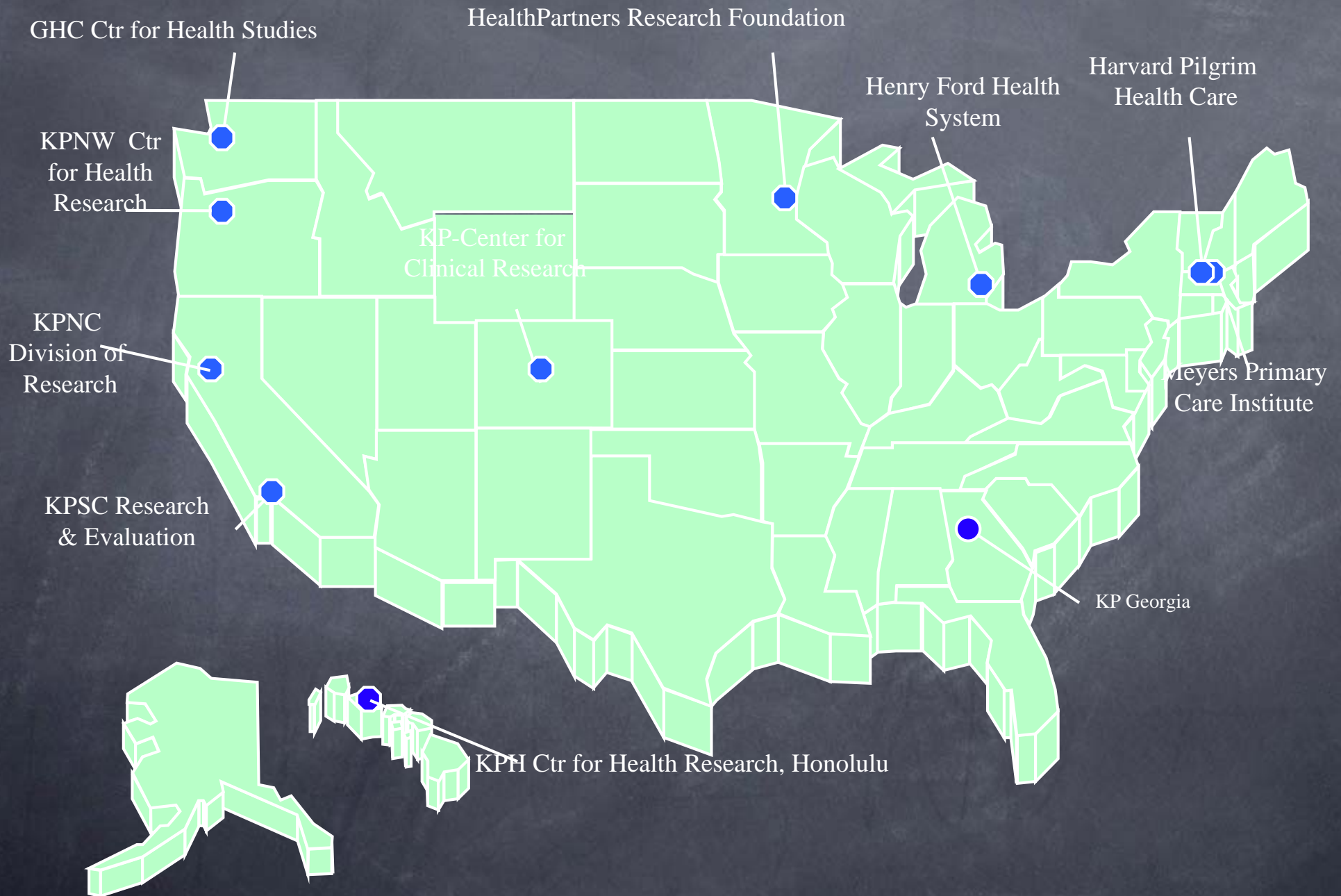
EAT FOR LIFE (Resnicow)



GUIDE TO DECIDE (Ubel)



HMO Cancer Research Network (CRN) Sites



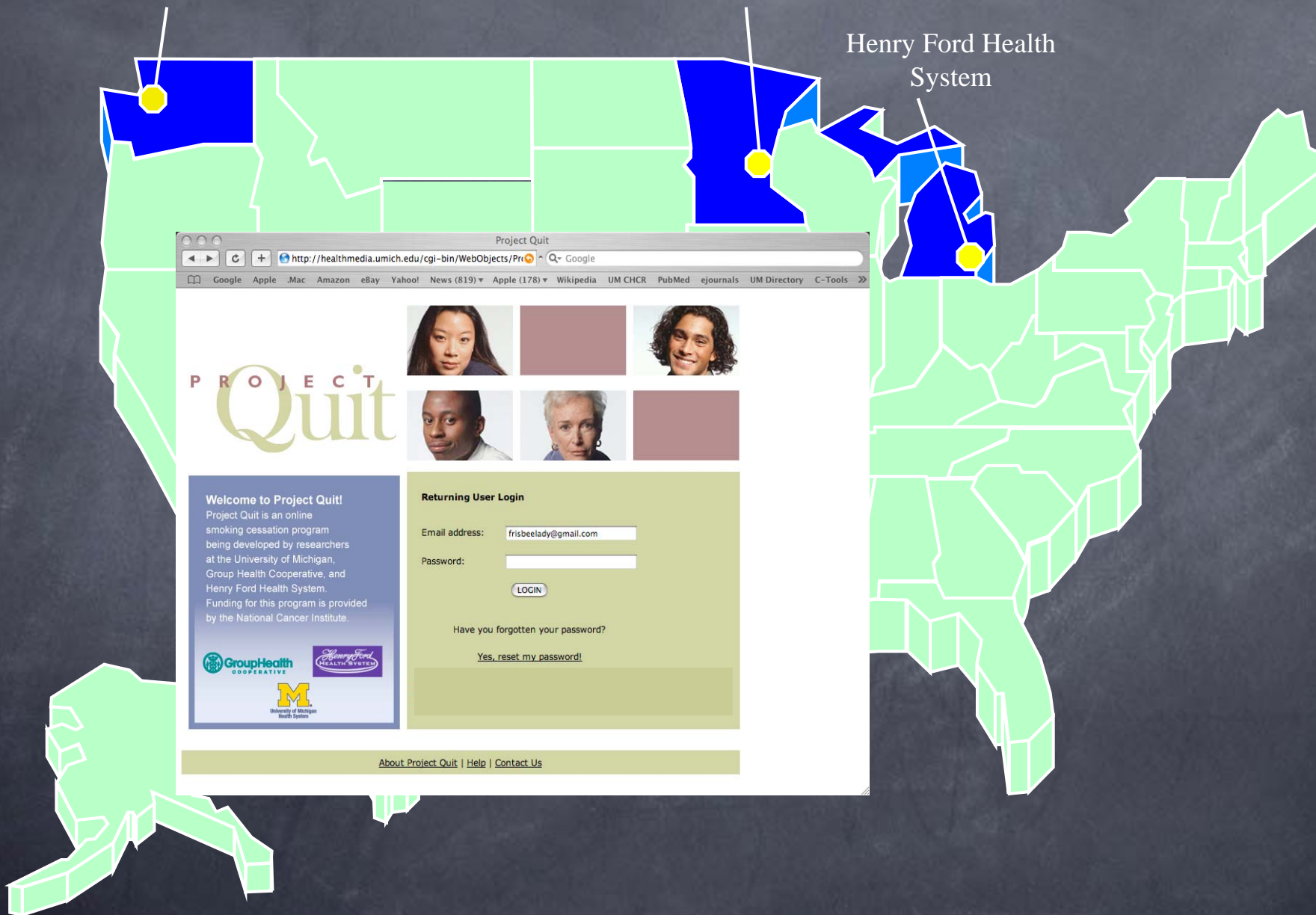
HMO Cancer Research Network (CRN) Sites

Project Quit (PI: Vic Strecher, PhD)

GHC Ctr for Health Studies

HealthPartners Research Foundation

Henry Ford Health System



HMO Cancer Research Network (CRN) Sites

Eat for Life (PI: Ken Resnicow, PhD)

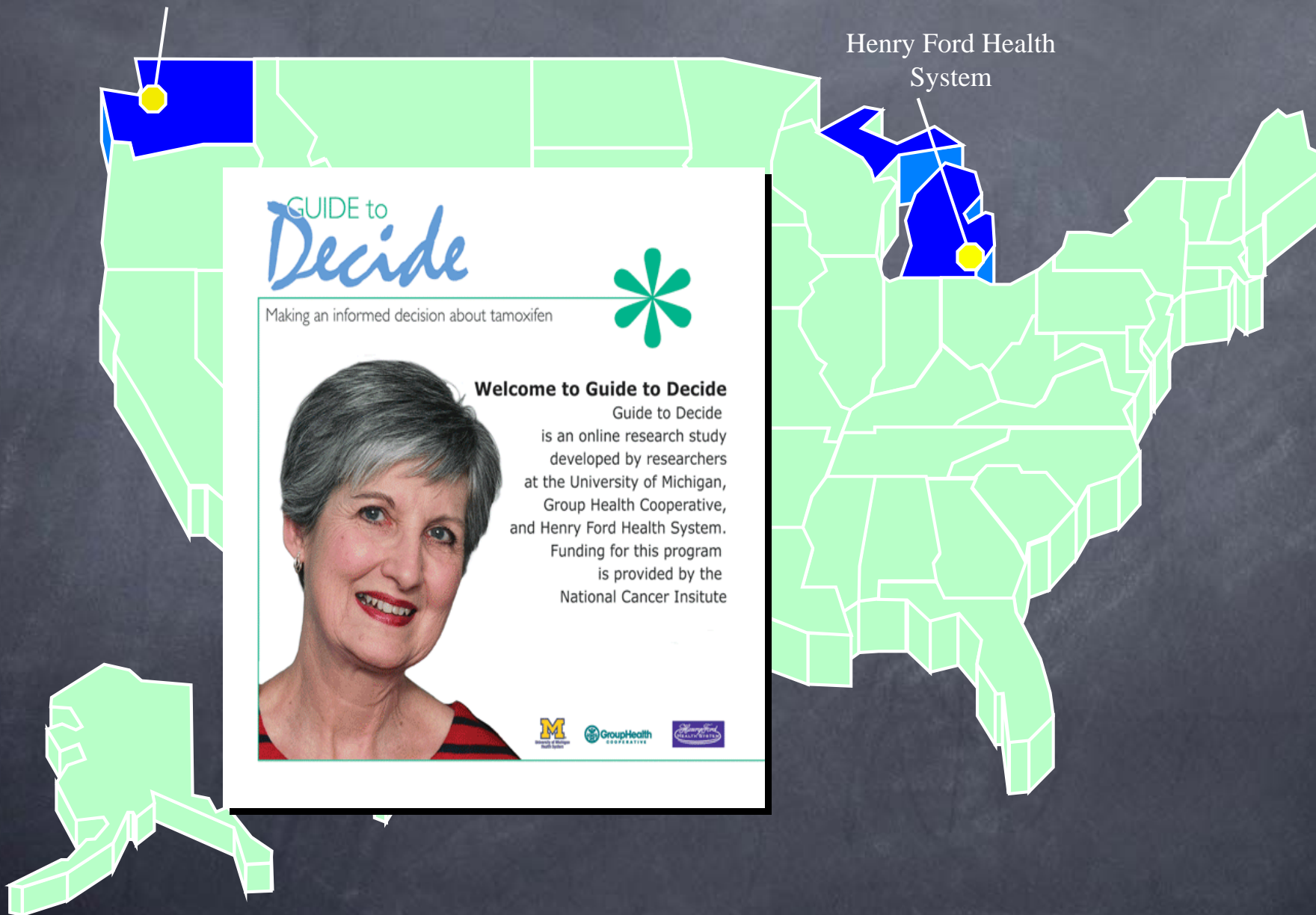


HMO Cancer Research Network (CRN) Sites

Guide to Decide (PI: Peter Ubel, MD)

GHC Ctr for Health Studies

Henry Ford Health System



A SNEAK PEAK

CECCR FINDINGS

TAILORING

- Motivational predisposition (“just tell me what to do” vs. “let me decide”) moderates response to a tailored dietary intervention (Resnicow et al., 2008).
- Tailoring dietary messages to ethnic identity worked particularly well among African Americans with a strong identification as a Black American (Resnicow et al., under review).
- A more personalized message source results in greater subsequent cessation (Strecher et al., 2008b).
- The depth of tailoring in smoking cessation messages is positively related to greater subsequent cessation (Strecher et al., 2008b).
- High-tailored narrative-based success stories result in greater subsequent cessation (Strecher et al., 2008b).
- High-depth self-efficacy messages result in greater engagement with a web-based smoking cessation program (Strecher et al., 2008a).
- High-depth tailored smoking cessation messages results in greater perceptions of message relevance, which results in greater engagement with a web-based smoking cessation program, which in turn results in a higher likelihood of smoking cessation (Strecher et al., 2008a).
- A study of neuroimaging using fMRI found that high-depth tailored messages are more likely to activate neural substrates associated with self-relevance and autobiographical episodic long-term memory (Chua et al., under review).
- A study of eye-tracking found that narratives with photographs of individuals tailored to the gender, race, and age of the user are more persuasive than photographs unmatched or mismatched to these characteristics (Chua et al., under review).

CECCR FINDINGS

RISK COMMUNICATION

- Pictographs make risk statistics easier to interpret, eliminating biases caused by other design factors (Zikmund-Fisher et al, under review).
- When using pictographs to present risk and benefit information, it is best to present information using an incremental risk format (Zikmund-Fisher et al in press; Zikmund-Fisher et al. under review).
- A measure of subjective numeracy is a good predictor of health communication predictor and has similar predictive ability as an objective numeracy measure (Fagerlin et al., 2007 and Zikmund-Fisher et al., 2007).
- Women's lack of interest in tamoxifen is largely due to their perception of the risks of tamoxifen, particularly in that they do not view the benefits of tamoxifen are worth the risks associated with taking it (Fagerlin et al., under review).
- Women's comparative risk perceptions were more important than their objective risk in predicting responses to a decision aid about tamoxifen (e.g., their anxiety, knowledge, and behavior) (Dillard et al., under review).
- Higher comparative risk perceptions were associated with more anxiety about breast cancer, more knowledge about the risks and benefits of tamoxifen, greater intentions to take action, and three months later, engaging in behaviors consistent with an interest in taking tamoxifen (Dillard et al, under review).
- The order in which the risks and benefits of a medication are presented has a significant impact on people's risk perceptions, knowledge, and behavior. When risks are presented last, people are more worried about the side effects of the medication and perceive them as more likely. The information presented last is remembered better. When risks are presented last, people are less interested in the medication (Fagerlin et al., in preparation).

CECCR FINDINGS HEALTH CARE SETTINGS

- An electronic behavioral intervention that helps patients understand their preferences among the options of screening tests available for colorectal cancer significantly improves screening behavior (Ruffin et al., 2007).
- Practice physicians and staff desire a colorectal cancer screening behavioral improvement intervention that intuitively makes sense and blends well with their daily workflow (Jimbo, in preparation). Linking the electronic behavioral intervention to a physician visit, an invitation letter by the patient's own physician, a brochure that emphasizes the importance of the research study and the participant's potential contribution, and reminder phone calls significantly improve recruitment rates (Jimbo, in preparation).
- Linking a pedometer to an Internet-based coaching program results in a roughly one mile per day improvement in walking behavior among a group of elderly diabetics (Richardson et al., 2007).

CECCR FINDINGS

METHODS

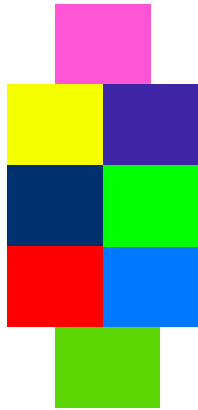
- A Multiphase Optimization Study using a fractional factorial experimental design can efficiently and effectively screen for multiple intervention factors (Nair et al., 2008).
- A significant number of smokers can be recruited through Health Maintenance Organizations (HMOs) for web-based smoking cessation interventions (McClure et al., 2007).
- Many of those who attrit from online RCTs and health interventions do so for reasons unrelated to the intervention, and they can be brought back into the sample using a follow-up by phone or mail (Couper et al., 2007). Mail is an efficient alternative to telephone as a method of participant follow-up in web-based studies, being both cheaper and having similar measurement properties to the online surveys (Couper et al., 2007).
- Multiple imputation can be used effectively to produce complete datasets for analysis to reduce the effects of selective attrition (Couper et al., 2005)

Tailoring depth

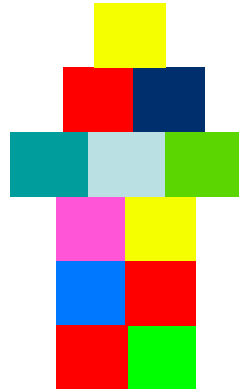
Tailoring depth



+



+



+

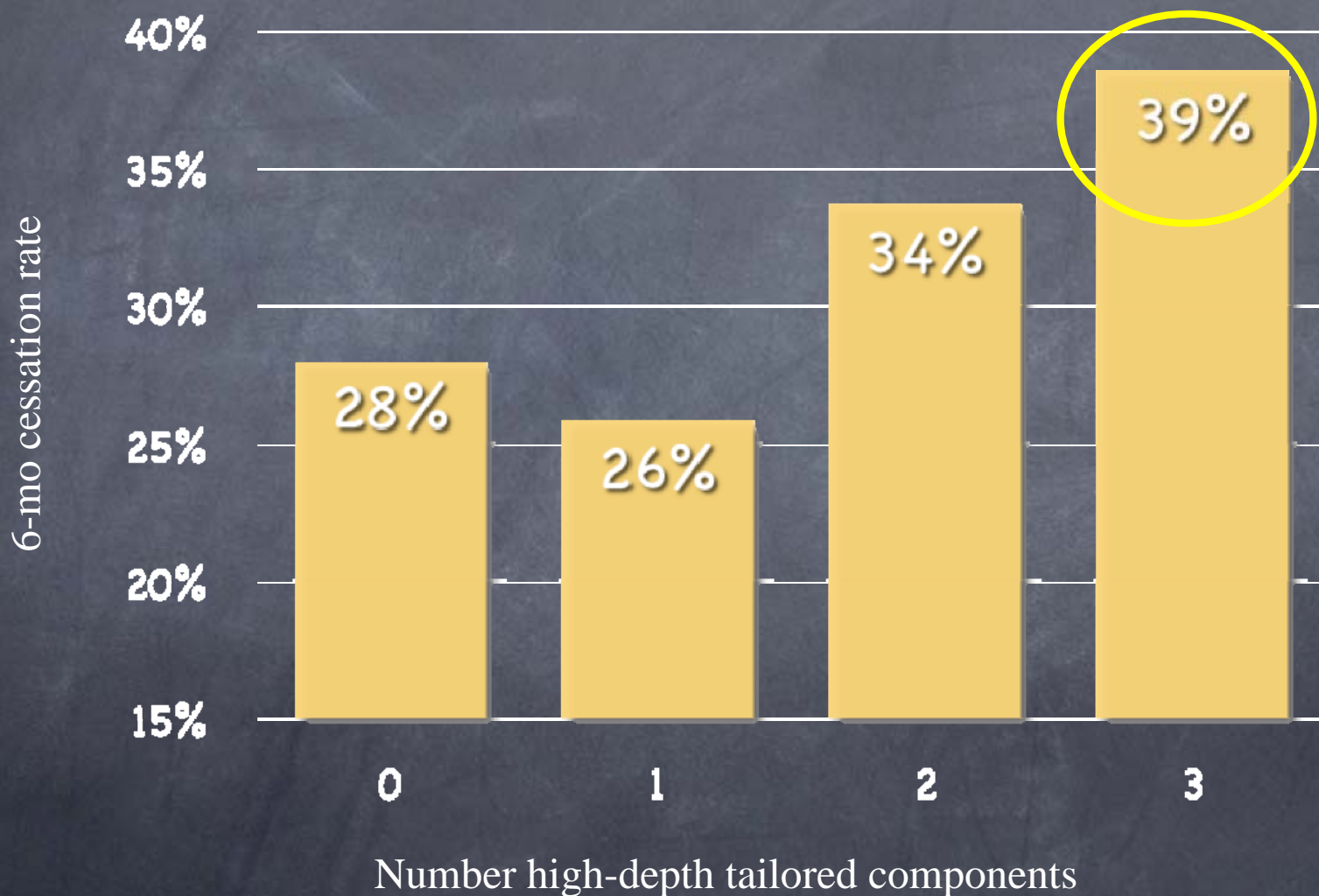


+



Tailoring depth →

Adjusted 6-month smoking cessation rates* by cumulated number of high-depth intervention components received. Per Protocol analysis. (n=944; OR=1.91; CI=1.18-3.11)



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VOLUME 34(5)

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A Journal of the

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American College of
Preventive Medicine

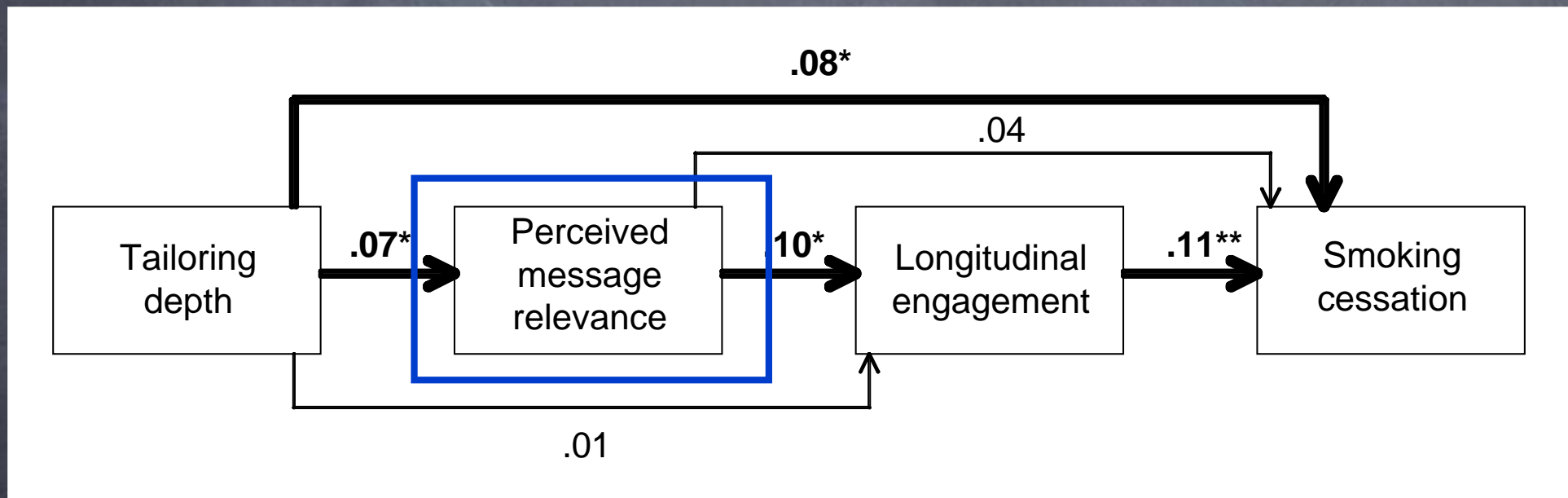
&

APTR

Association of Teachers of Preventive Medicine

ELSEVIER
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Pathway of tailoring depth, message relevance, number of web sections opened, and 6-month abstinence.



* $p < .05$

** $p < .01$

Relevance through stories

Tailoring Variables Used:



Welcome back **Brian**! As we come to the end of your Project Quit guide, we'd like to leave you with some **words of advice from Scott. Like you, he was ready to quit smoking** but faced many challenges. Here's his story.

+ Name

+ Gender

+ Stage of Change

Why did you decide to quit?

I had several good reasons for quitting. First, I needed to save money for a new car and knew I was throwing a lot of money away buying cigarettes. Second, I didn't like leaving the fun when I'd have to step outside to smoke at places that didn't allow smoking inside. It made me feel like an outcast. Overall, I guess I just finally had enough.

How did you prepare for the change?

Well, I had read that you have to change things that you do and how you think to stop smoking. So, about two weeks before I quit, I decided to track all my cigarettes. Every time I wanted one, I'd first write down why I wanted it and when I wanted it. Then I'd write why I wanted to quit.

Did you do anything different as your quit day approached?

Yes. I usually smoked about a pack a day, but started cutting a few out each day just to see how I'd do. I'd play a game and would try to come up with 5 things I could be doing instead of sitting there idle, potentially smoking. Once I came up with the list, I could either reward myself and have a cigarette, or just go do something from the list. I also began to skip my "dessert" cigarette before bed.

Did tracking why you smoked help?

Definitely. When I looked back over what I had tracked about my smoke breaks, what stood out the most was that I didn't always have a good reason to be smoking. I was just smoking to smoke.

Did you ask for help?

Not initially, but once my friends and family knew how much I wanted to quit, they were very helpful, giving me lots of support. We spent a lot of time at the movies, sitting in non-smoking sections of restaurants, visiting local area stores and museums I hadn't been to in a while, and talking about how hard it is to quit. I can't believe how many people listened to me about how hard it was for me to quit.

Tailoring Variables Used:



Rhonda, as we come to the end of your Project Quit guide, we'd like to leave you with some words of advice from Deb. Like you, she was ready to quit smoking but faced many challenges. Here's her story:

Why did you decide to quit?
I had several good reasons for quitting. First, we needed to save money to put towards a car that would actually work. Second, my husband wanted me to. Third, I didn't like leaving the fun when I'd have to step outside to smoke at places that didn't allow smoking inside. It made me feel like an outcast. Plus, it wasn't really fair to the kids for me to tell them not to smoke while I did. "Do as I say, not as I do" isn't such a great example to set.

How did you prepare for the change?

I had heard that you have to change what you do and how you think to stop smoking, so I wanted to try something I actually thought I could do to help me quit. So about two weeks before I was going to quit, I began to walk first thing in the morning. I don't normally smoke right before or after exercising, so that helped me delay my first smoke of the day.

Did you try anything else as your quit day approached?

Yes. I usually smoked about a pack and a half a day, but started cutting a few out each day just to see how I'd do. I'd make a game out of it by trying to drive to work without a cigarette. Then, if I really needed it, I'd have one on the way from the parking lot to the office. I also cut back on going to the bar and parties where I knew there would be a lot of smoking. And I began to skip my "dessert" cigarette before bed.

Did these things help?

Definitely. By the time I quit, I was walking four mornings a week and beginning to feel better already.

Did you ask for help?

I told my cousin Jason that I was going to need some help. If I say I'm going to do something, he doesn't cut me much slack until I do it, which is exactly what I needed. We spent a lot of time at the movies, sitting in non-smoking sections of restaurants, and hanging out in other places that wouldn't tempt me. Of course, all I really needed to do was taking one good look at my kids to make me feel good about my decision.

+ Name

+ Age

+ Gender

+ Ethnicity

+ Stage of Change

+ Marital status

+ Smoking status of spouse

+ Child in home

+ Physically active

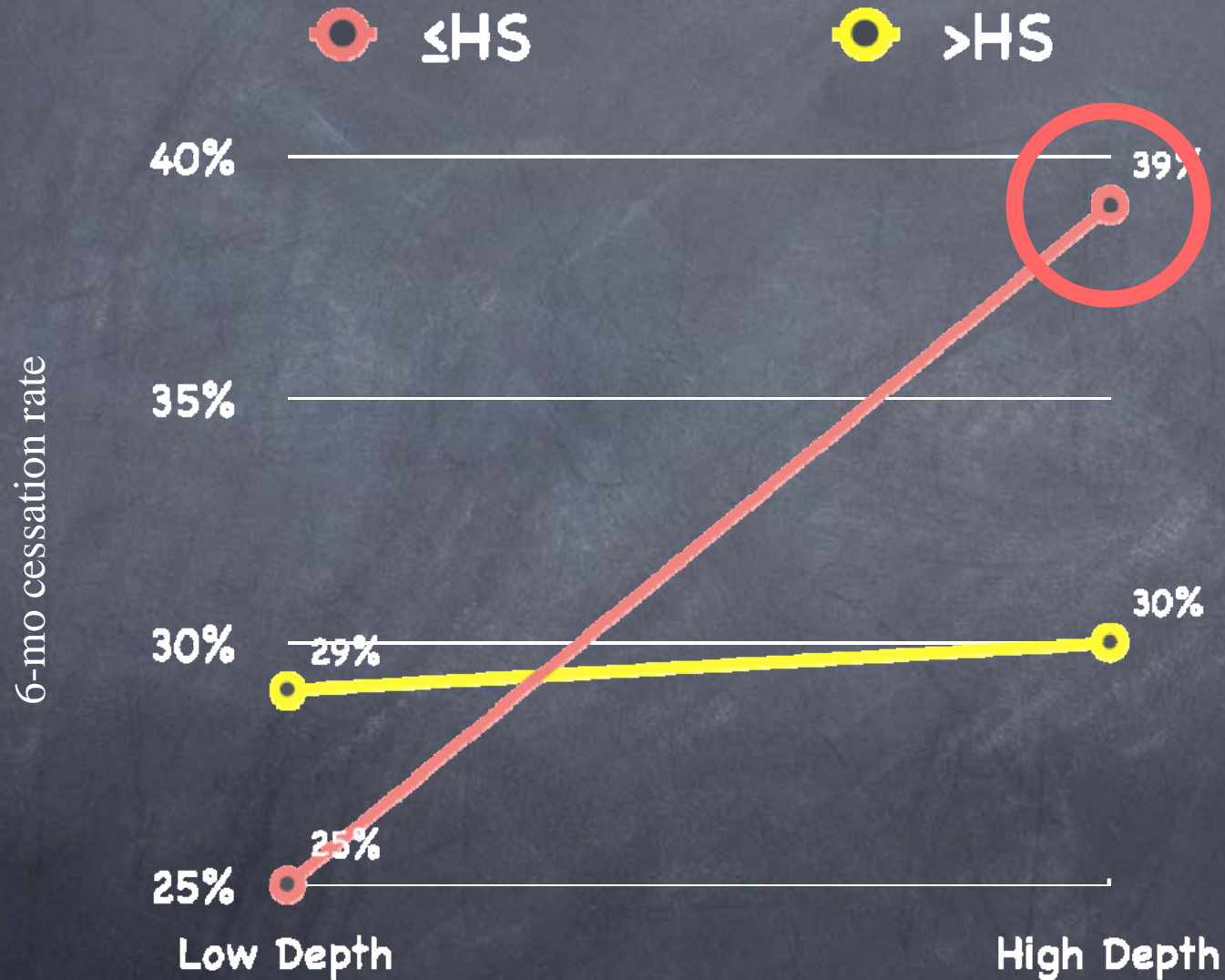
+ # of cigs smoked

+ Barrier

+ Job status

+ Social Support

Influence of High- versus Low-Depth Narratives on 6-month smoking cessation by Education n=944; $\chi^2=4.24$, $p=.05$.

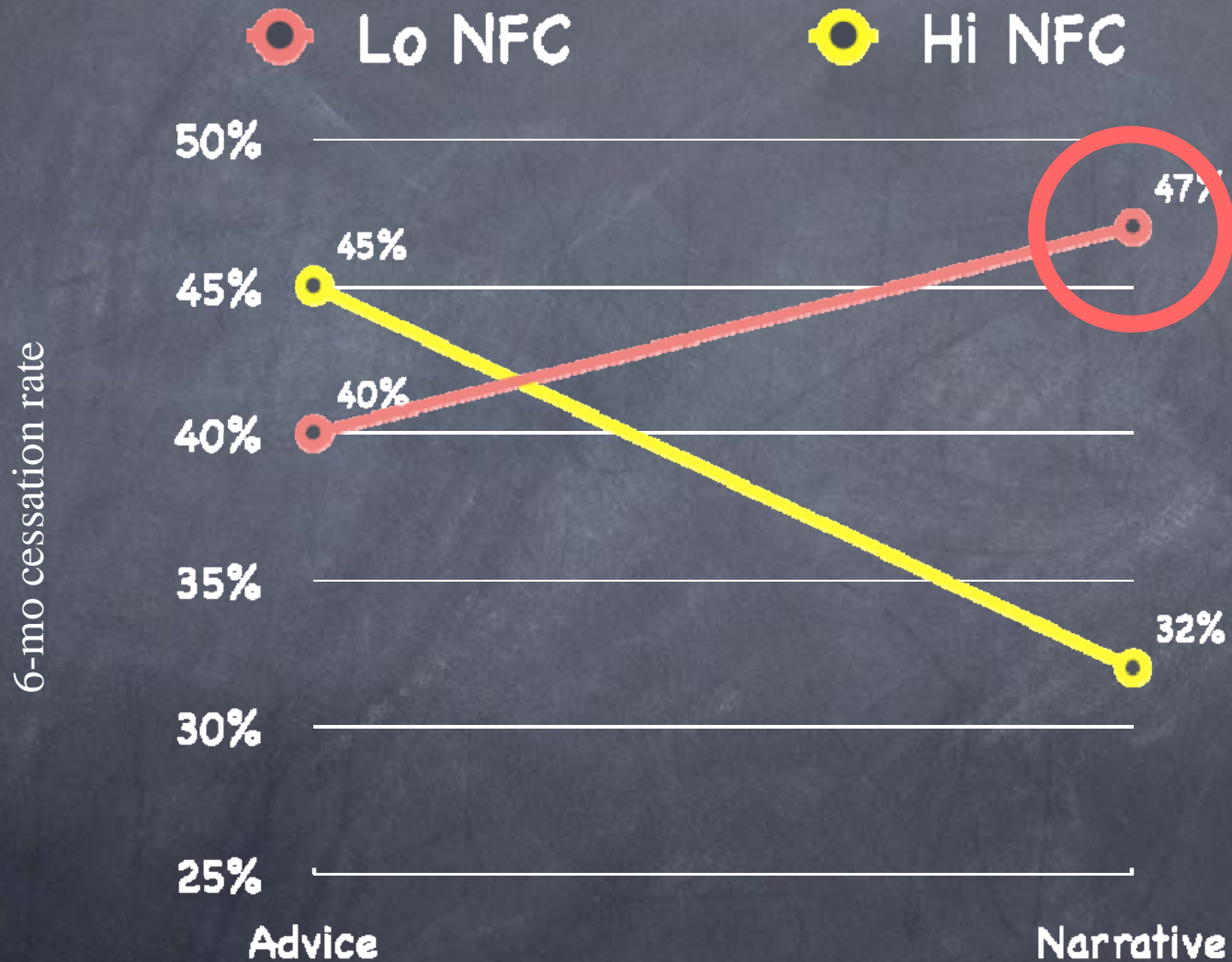


Need for Cognition

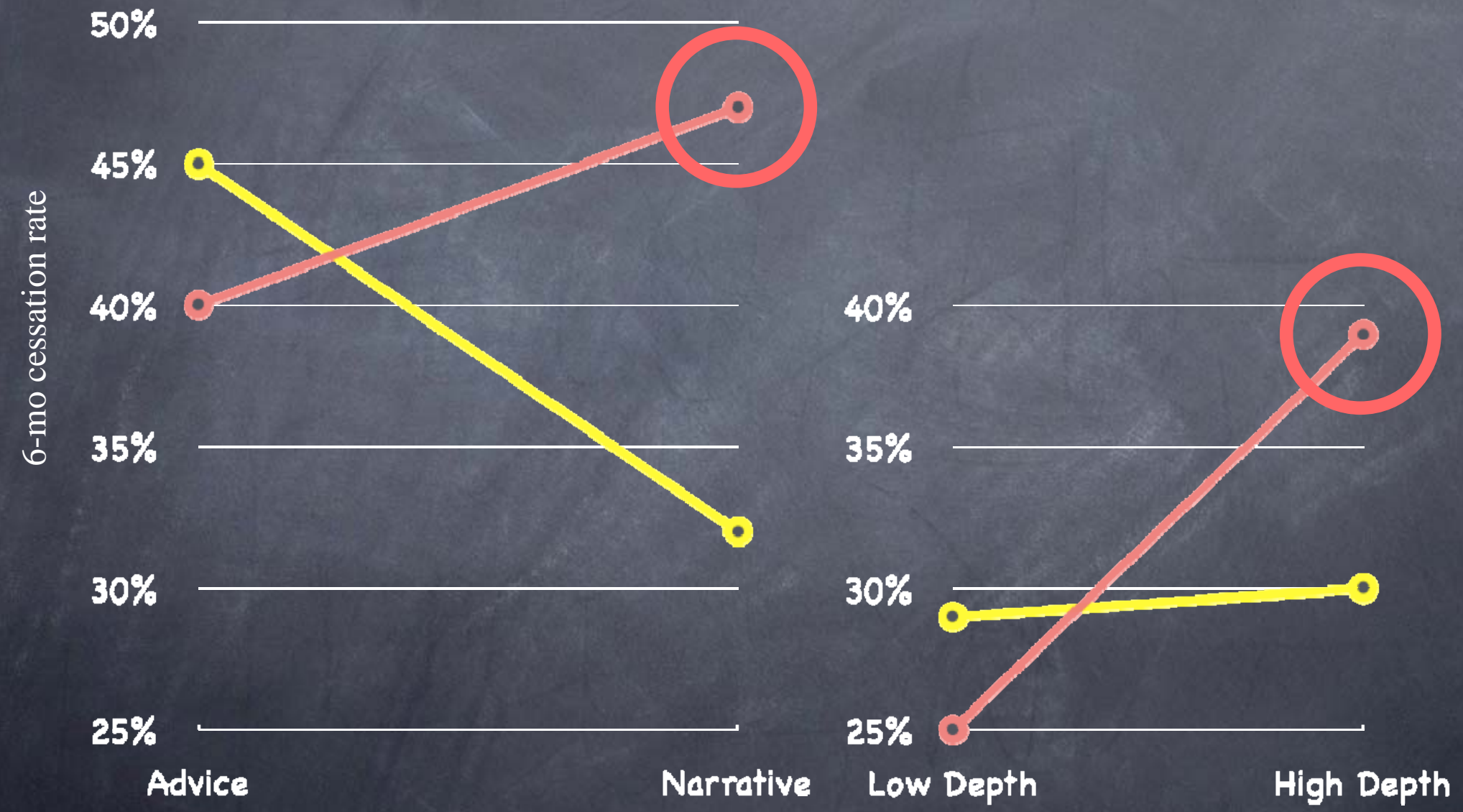
- Thinking is not my idea of fun. (Reversed)
- I only think as hard as I have to. (Reversed)
- I like to have the responsibility of handling a situation that requires a lot of thinking.
- I prefer complex to simple problems.

cessation by Need For Cognition (NFC) n=246; t=1.64, p=.10

Preliminary Data: Do Not Cite

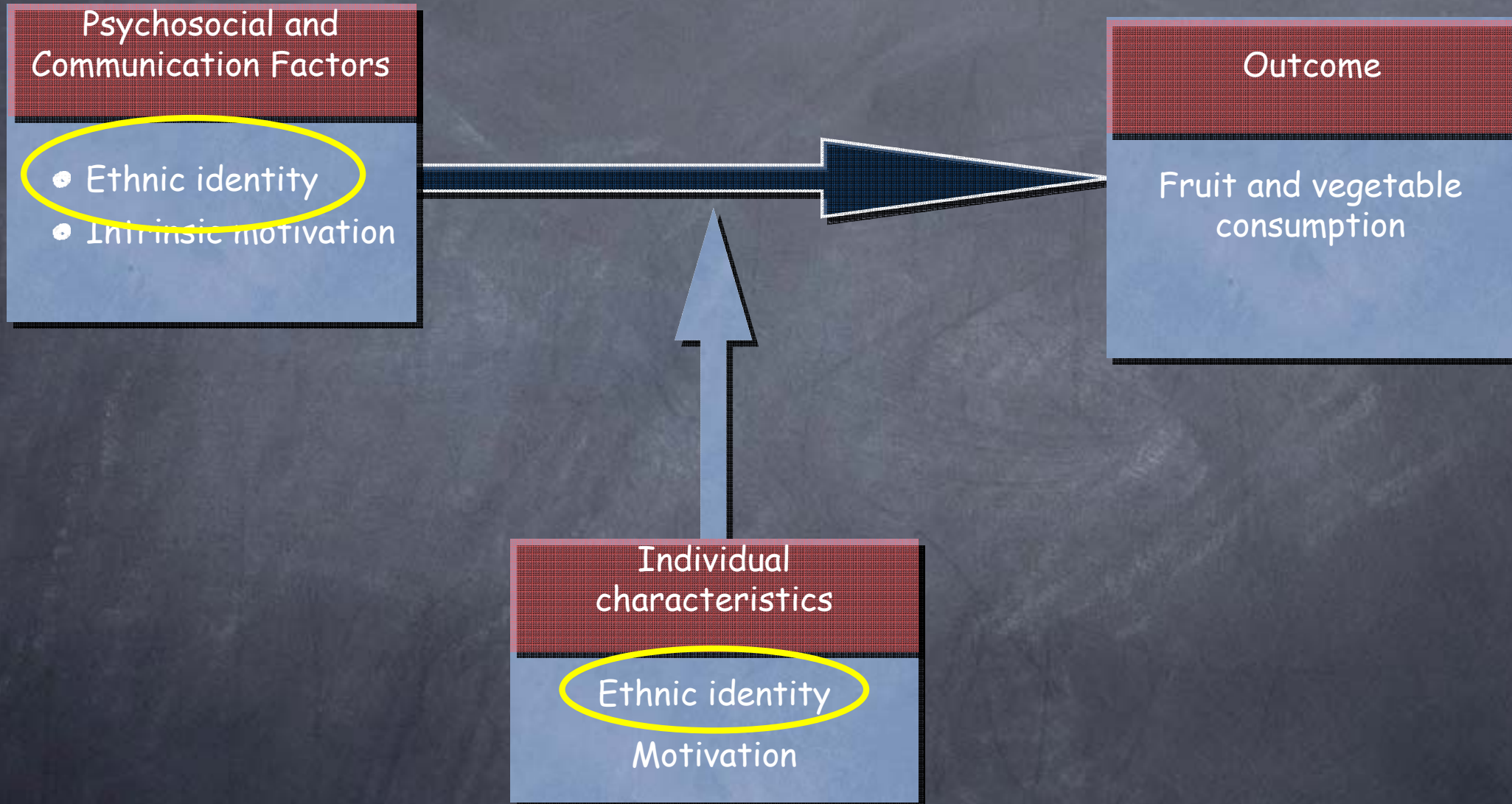


6-month smoking cessation from the two studies:

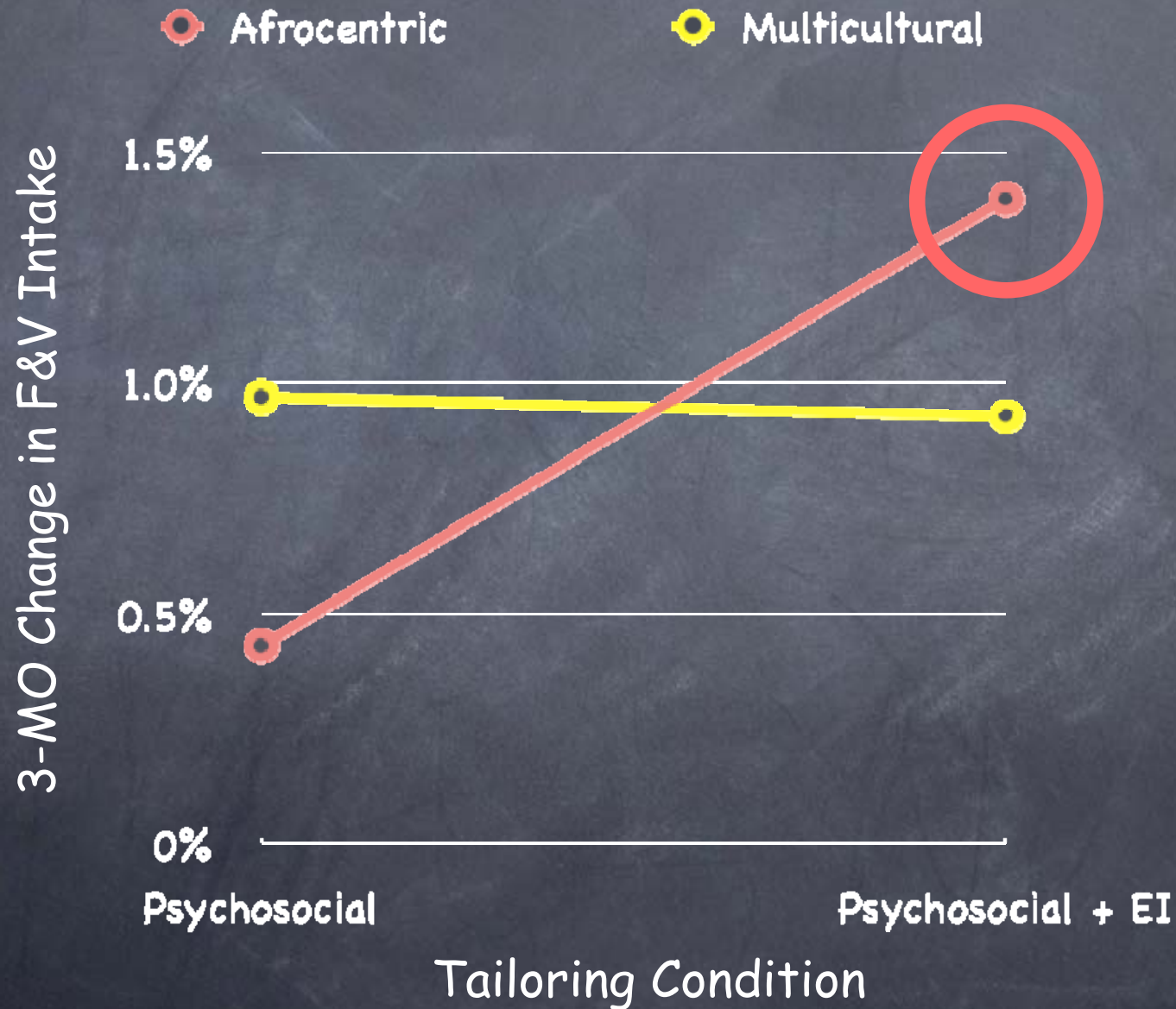


Relevance through identity

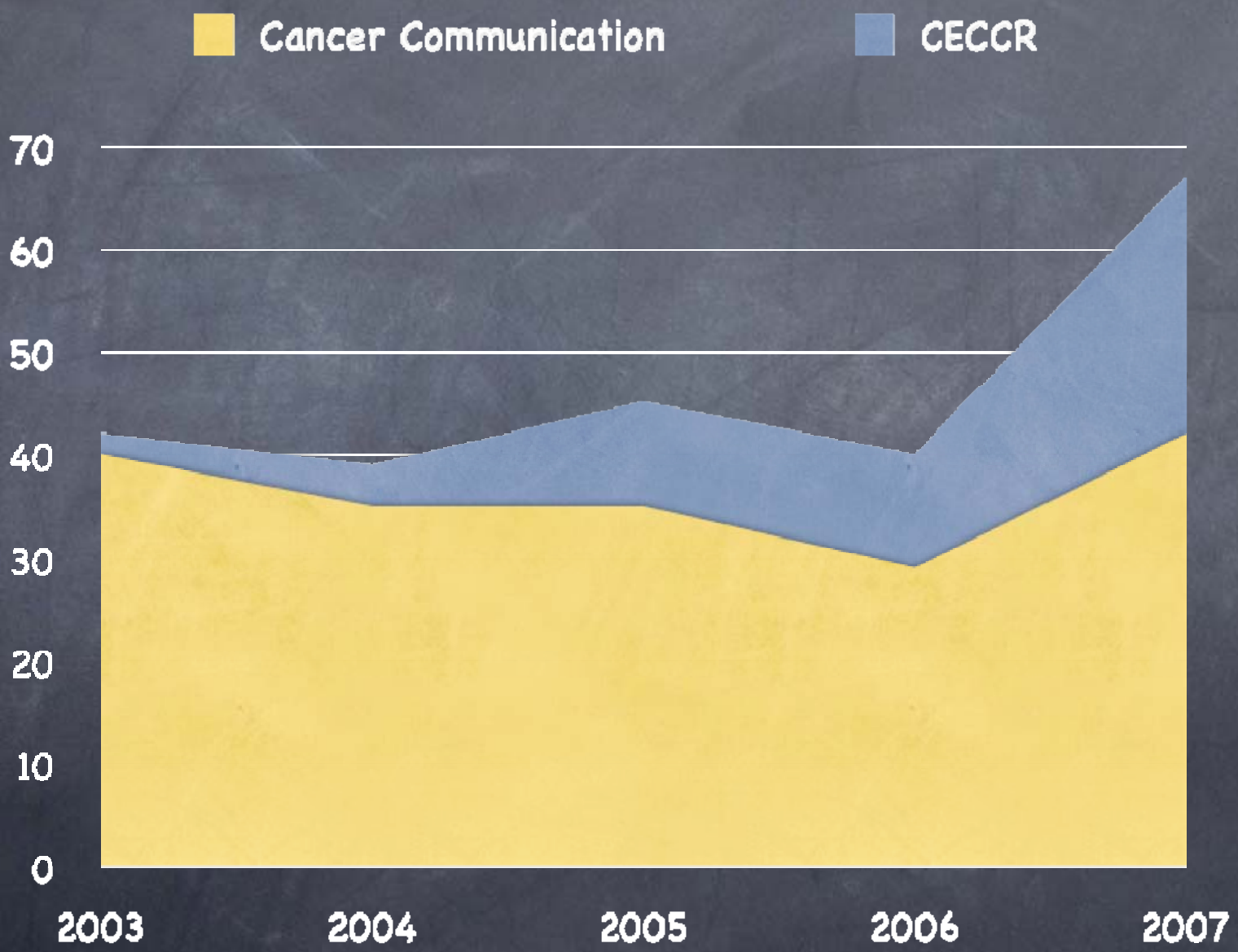
EAT FOR LIFE (Resnicow)



Influence of tailoring to ethnic identity on change in Fruit and Vegetable Consumption at 3-MO Follow-Up by Baseline Ethnic Identity (EI). (interaction: $p < .01$)

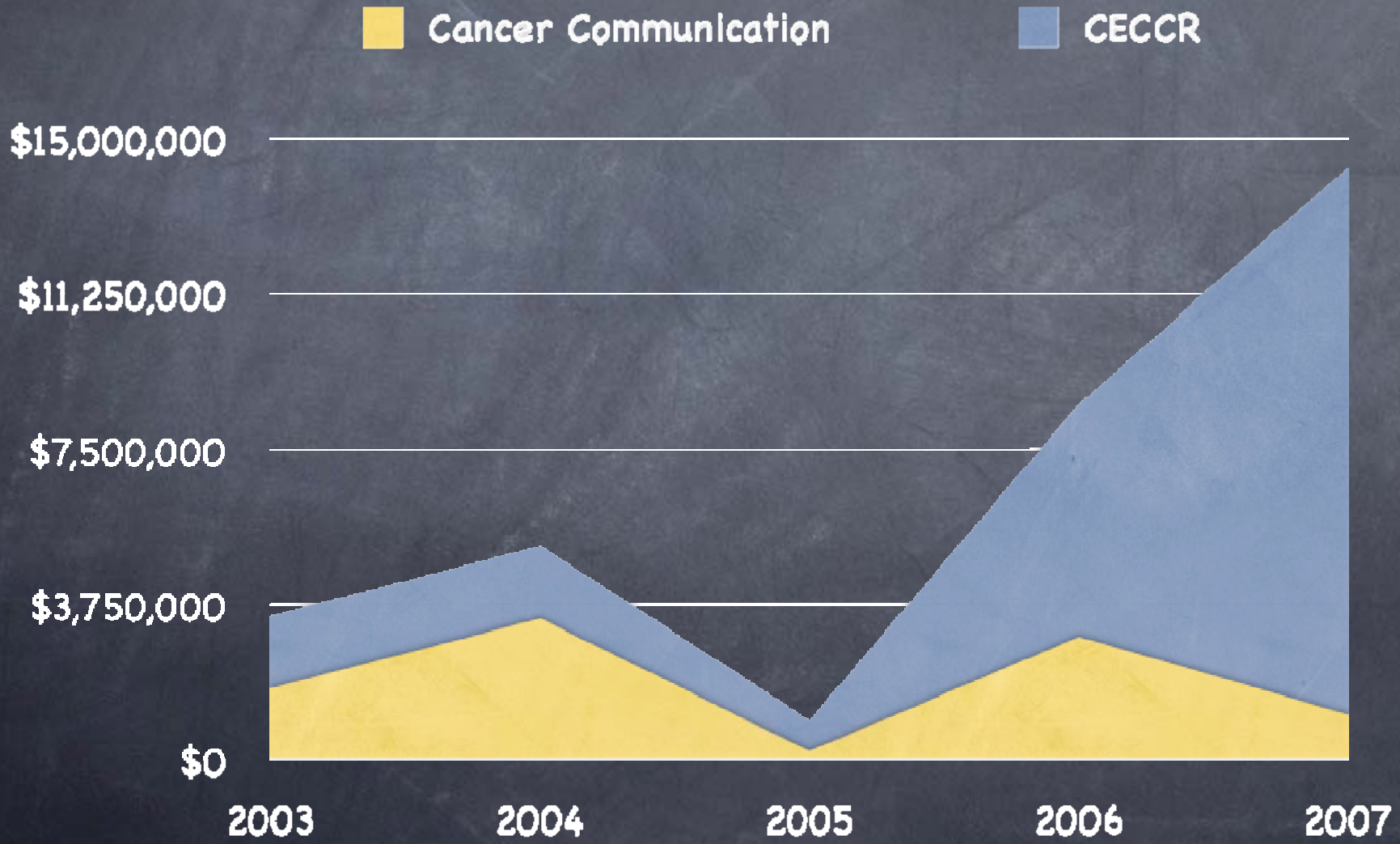


PUBLICATIONS: CECCR-Related and General Cancer Communications



FUNDING: CECCR-Related and General Cancer Communications

35 extramural grants for over \$23 million (direct funding; excluding CECCR).
25/35 extramural grants from Developmental Project research.



DEVELOPMENTAL PROJECTS

Design of Effective Web Data Collection for Cancer Prevention Studies
Mick P. Couper, PhD

Analysis Strategies for Time-Varying Treatment Components in Cancer Prevention
Susan A. Murphy, PhD

Automated Step-Count Feedback to Promote Physical Activity in Chronic Disease
Caroline R. Richardson, MD

Understanding information scatter on the Internet
Suresh K. Bhavnani, PhD

Stepping Up to Health: Expanding the Reach of an Automated Step Count Intervention
Caroline R. Richardson, MD

Cancer Screening Adherence through Technology-Enhanced Shared Decision Making
Masahito Jimbo, MD, PhD

Development of a Preference-Tailored Intervention for Increasing Colorectal Cancer Screening
Sarah T. Hawley, PhD, MPH

fMRI Study of High vs. Low Tailored Smoking Cessation Messages
Hannah Faye Chua, PhD

Using Tailored Mobile Phone-Based Text Messages to Impact Weight Loss among Obese Adolescents
Susan J. Woolford, MD, MPH

Improving Risk Communication through Tailored Testimonials
Amanda Dillard, PhD

An Interactive Website to Provide Tailored Education and Risk Communication to Women at High Risk of Breast Cancer
J. Scott Roberts, PhD

Eye Tracking of Tailored Graphic and Text Materials
Hannah Faye Chua, PhD

Tailored Health Behavior Intervention for Hispanics
Rachel E. Davis, MPH

Walking

Decrease rates of

- Heart Disease
- Diabetes
- Cancers
- Depression
- Obesity



Enhanced Pedometers

- Dual axial accelerometers
- Memory to store time-stamped step count data
- Information on intensity and duration, not just total steps
- Can upload to a computer for automated complex feedback (e.g., tailoring on step-count data)





Getting Started About Us Questions / Concerns Sponsors

Welcome Caroline Richardson!

1 Progress

For the week of 01/01/2006 to 01/07/2006, you met your walking goals every day! Great work! Your average daily step count for the week was 9310 steps.

[<<- Previous](#) [Next -->>](#)

2 Motivation

Here we are, already at week 5! With only tw
...

[Archives](#) | [Learn More](#)



3 Tips

Is it important for me to see a Dietitian?

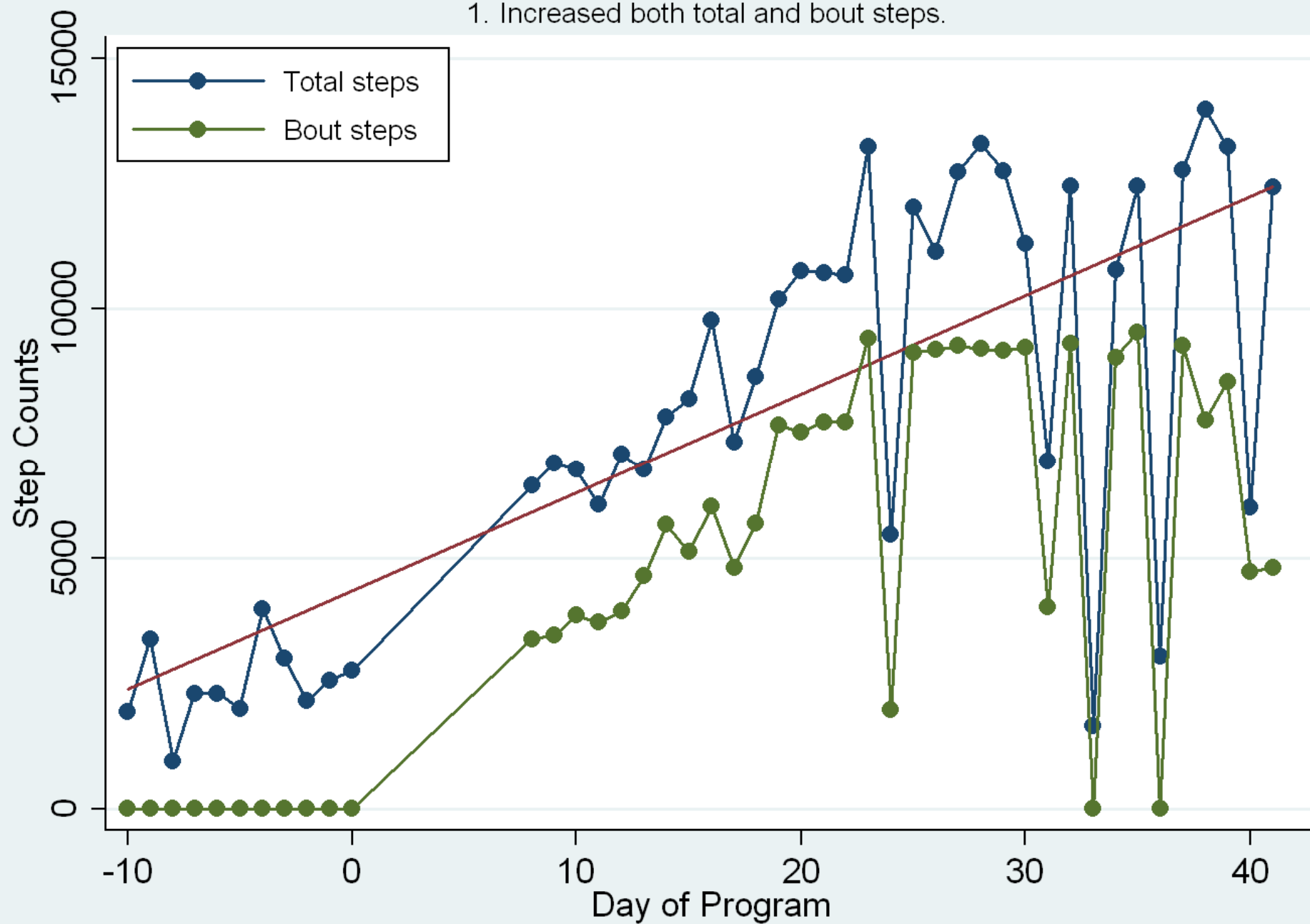
Registered Dietitians (RDs) have the proper traini...

[Archives](#) | [Learn More](#)

4 Goals

For 01/22/2006 to 01/28/2006
Your goal is 5600 Total Daily Steps

1. Increased both total and bout steps.



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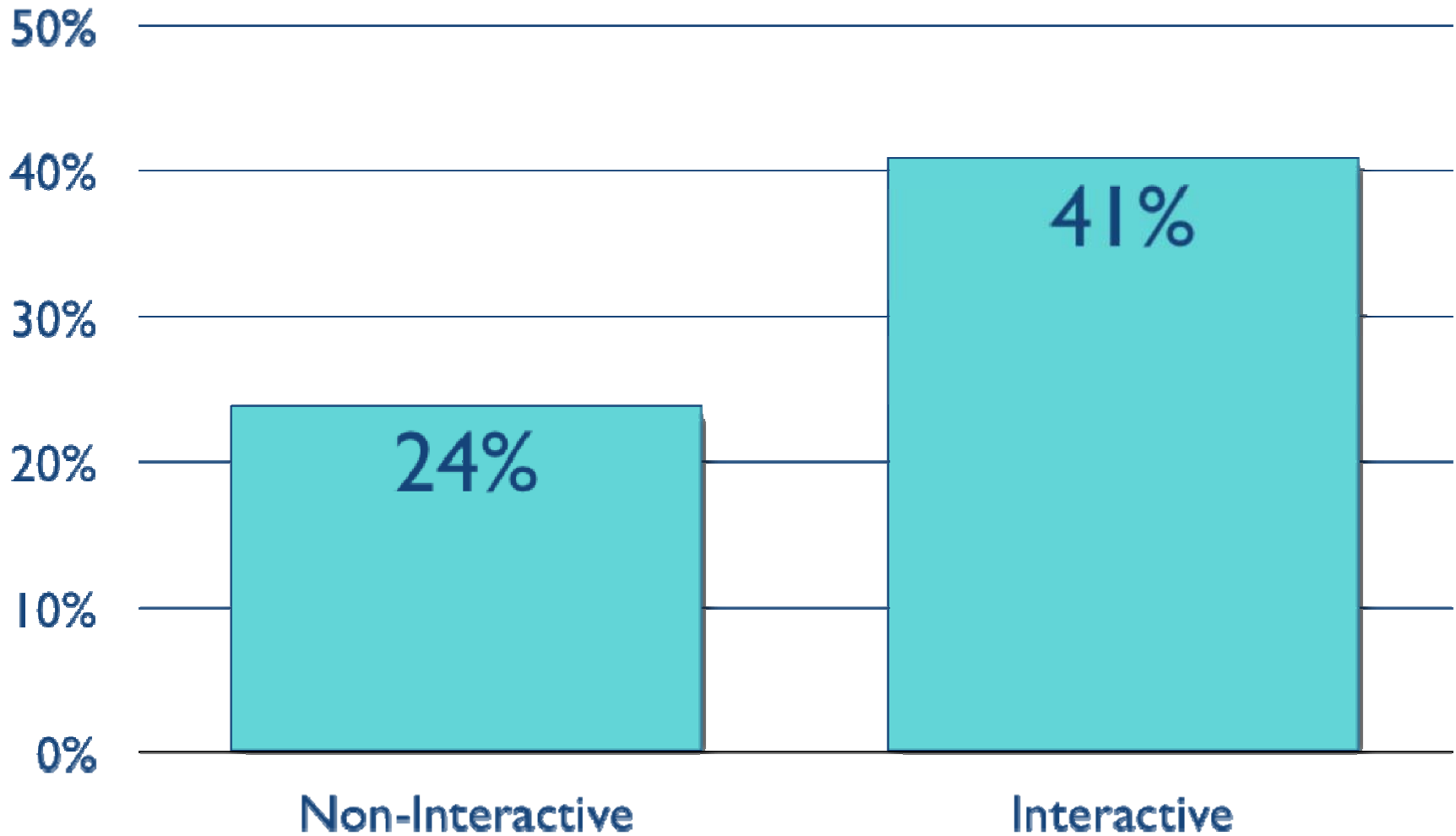
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Hannah Faye Chua, PhD

Tailored Health Behavior Intervention for Hispanics
Rachel E. Davis, MPH

Six-month colorectal screening rates by assignment to interactive versus non-interactive website ($p < .05$).



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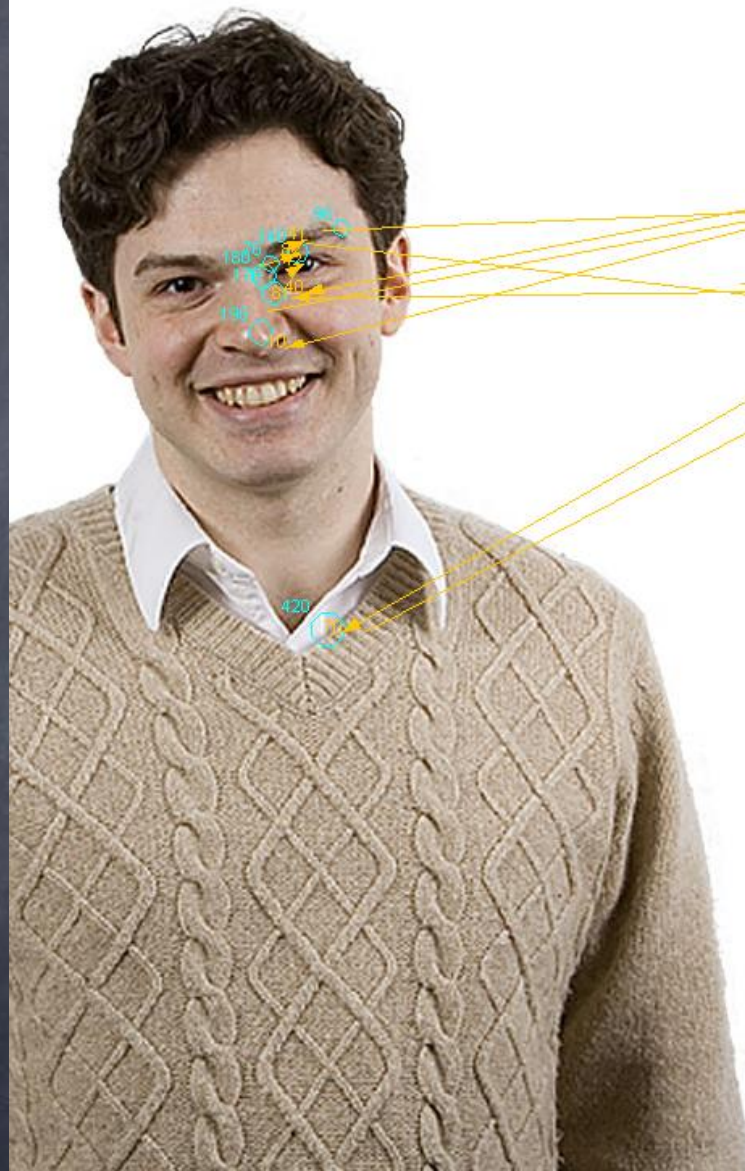
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Tailored Health Behavior Intervention for Hispanics
Rachel E. Davis, MPH



I had a lot of reasons why I wanted to quit. First, I wanted to save more money to put towards a new car. Second, my family was really sick of how my cigarettes made everything smell so bad. Plus, honestly, I was tired of having to go outside to smoke at all the places that don't allow smoking inside. It made me feel like an outcast.

I knew I needed to do things to get ready for my quit day. So about two weeks before I was going to quit, I told my friend Chris I was going to have to take a break from our Thursday lunch out. The place we went was a smoking haven. Chris was great about it though and said I could pick a new non-smoking place to go instead.

After I quit, I did everything I could to stay away from coffee. Talk about temptations! I bought myself the freshest, tastiest orange juice to start my day. I still needed my pick-me-up though, so I drank those new fancy cold caffeine drinks since they didn't make me want to light up.

I told my cousin that I was going to need some help. If I say I'm going to do something, she doesn't cut me much slack, which is exactly what I needed.

After way more attempts than I'd like to admit, I can proudly say that I didn't give up and have been smoke-free for over two years and counting. You know, I'm still amazed at how much better I feel about myself. And the new car I eventually got sure is nice too.



There were tons of reasons why I didn't want to smoke anymore. I was getting a little worried about this cough I got that wouldn't go away. Plus, cigarettes were costing me a fortune. But the biggest reason was that I was simply tired of cigarettes ruling my day. I like to be in control, and it was pretty clear that I wasn't.

I read somewhere that it was good to make some changes before actually quitting – to shake up my normal routines. So I gave it a try and shifted my workouts to first thing in the morning. I don't normally smoke right before or after exercising. It totally helped me delay my first smoke of the day.

Once I did quit, it was all about keeping busy and keeping something on me at all times to stop urges. Gum, lollipops, and coffee stirrers were my best friends, especially when I was driving. My glove box is still full of things I like that will keep me busy, especially when I'm stuck in traffic jams.

I got lots of help from my family. I had no idea how much they wanted me to quit until I saw all the emails they sent me every day to encourage me.

It took a few tries and some help from those nicotine patches before I finally quit for good! I haven't smoked in a little over a year. I still sometimes get a craving, but I know how to talk myself out of it. The best thing of all though – that nasty cough, went away.



The old quitting standbys like health and money didn't really matter to me. What mattered was that every time I met someone I was interested in dating, I found out they didn't smoke and wouldn't date a smoker. Sure, I could have looked for a smoker to date, but I think deep down I wanted to quit and that seemed as good a reason as any to try.

Before I quit I tried different things to cut back on how much I was smoking. I really liked to smoke while on the phone, so that seemed like a good place to try to cut back. I made a game out of it. I could only smoke after I hung up from a call, and I could only smoke half a cigarette. I did it. It made me see that I could talk without smoking.

After I quit though, I put most of my energy into how to deal with stress without lighting up. It was hard. I had no idea how much I depended on smoking when I was stressed. But with some deep breathing exercises and talking to my friends when I was feeling overwhelmed, I slowly learned to adapt.

When it came to support, I didn't mess around. I joined online support groups, used our company's free phone counselor program, and asked all my friends to keep an eye on me.

I've been quit for about 4 months now. Some days are easy, some days not so much. But hey, I got myself into that mess, so I'm going to be the one to keep myself out of it.

And in case you were wondering, my dating life has improved dramatically. That alone is worth it!

85 participants:

Most convincing testimonial

Most picture/text saccades

Smaller average pupil size



I had a lot of reasons why I wanted to quit. First, I wanted to save some money to put towards a new car. Second, my family was really sick of how my cigarettes made everything smell so bad. Plus, honestly, I was tired of having to go outside to smoke at all the places that don't allow smoking inside. It made me feel like an outcast.

I knew I needed to do things to get ready for my quit day. So about two weeks before I was ready to quit, I told my friend I think I was going to have to take a break from our Thursday lunch out. The place we went was a smoking lounge. Chris was great about it though and said I could pick a new non-smoking place to go instead.

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Matched



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Mismatched



The old quitting strategies like wills and money didn't really make it for me. What worked was that every time I quit someone I was interested in dating. I found out they didn't smoke and wouldn't date a smoker. Sure, I could have looked for a smoker to date, but I think deep down I wanted to quit and this seemed as good a reason as any to try.

Before I quit I had different things to cut back on how much I was smoking. I really liked to smoke while on the phone, so that seemed like a good place to try to cut back. I made a game out of it. I could only smoke after I hung up from a call, and I could only smoke half a cigarette. I did it. It made me see that I could talk without smoking.

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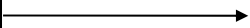
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I've been quit for about a month now. Some days are easy, some days not so much. But hey, I got myself into that mess, so I'm going to be the one to keep myself out of it. And in case you were wondering, my dating life has improved dramatically. That alone is worth it!

Sunset

Enhancing neural activation?

Tailoring
depth



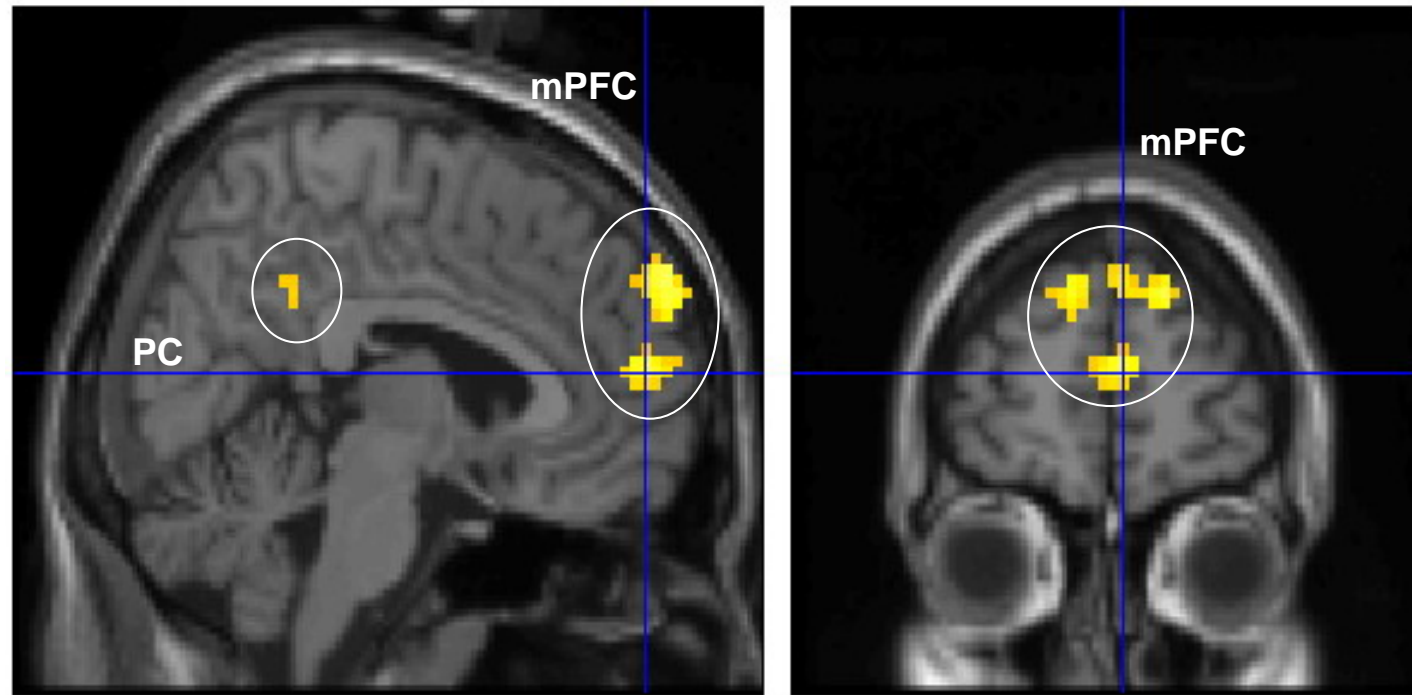
neural activation?

Enhancing neural activation?



Neural activation among cigarette smokers exposed to high- versus low-depth tailored smoking cessation messages. N=24. Random effects analysis. $p < .005$

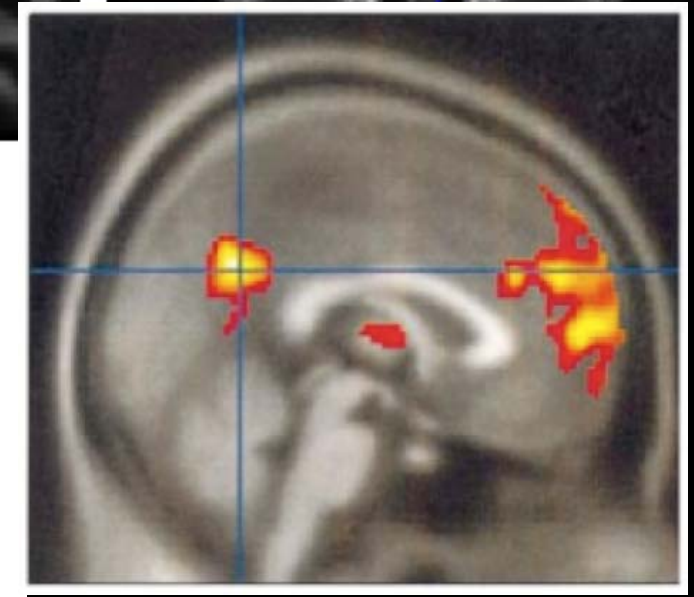
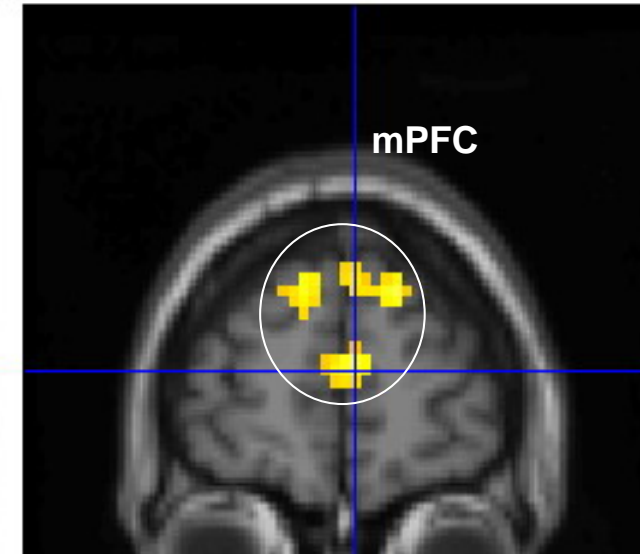
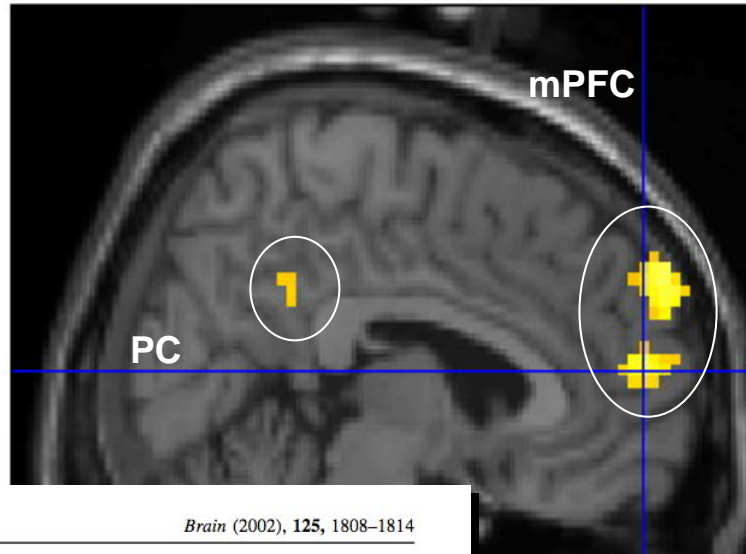
Tailoring
depth



- mPFC Brain activation area: medial prefrontal cortex
- Area known for: self-referential activities, personal relevance
- PC Brain activation area: posterior cingulate/precuneus
- Area known for: self-referential activities, memory

Neural activation among cigarette smokers exposed to high- versus low-depth tailored smoking cessation messages. N=24. Random effects analysis. $p < .005$

Tailoring
depth



Brain (2002), 125, 1808–1814

Neural correlates of self-reflection

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Summary

The capacity to reflect on one's sense of self is an important component of self-awareness. In this paper, we investigate some of the neurocognitive processes underlying reflection on the self using functional MRI. Eleven healthy volunteers were scanned with echoplanar imaging using the blood oxygen level-dependent contrast method. The task consisted of aurally delivered statements requiring a yes–no decision. In the experimental condition, participants responded to a variety of statements requiring knowledge of and reflection on their own abilities, traits and attitudes (e.g. 'I forget important things', 'I'm a good friend', 'I have a quick temper'). In the control condition, participants responded to statements requiring a basic level of semantic knowledge (e.g. 'Ten seconds is more than a

minute', 'You need water to live'). The latter condition was intended to control for auditory comprehension, attentional demands, decision-making, the motoric response, and any common retrieval processes. Individual analyses revealed consistent anterior medial prefrontal and posterior cingulate activation for all participants. The overall activity for the group, using a random-effects model, occurred in anterior medial prefrontal cortex ($t = 13.0$, corrected $P = 0.05$; $x, y, z, 0, 54, 8$, respectively) and the posterior cingulate ($t = 14.7$, $P = 0.02$; $x, y, z, -2, -62, 32$, respectively; 967 voxel extent). These data are consistent with lesion studies of impaired awareness, and suggest that the medial prefrontal and posterior cingulate cortex are part of a neural system subserving self-reflective thought.

DISSEMINATION

DISSEMINATION

GOVERNMENT AND NONGOVERNMENT ORGANIZATIONS

- National Cancer Institute (NCI)
- National Institute for Mental Health (NIMH)
- National Institute on Drug Abuse (NIDA)
- Occupational Safety and Health Administration (OSHA)
- Robert Wood Johnson Foundation (RWJF)
- Joint Commission on Accreditation of Healthcare Organizations (JHACO)
- Institute of Medicine (IOM)
- Singapore National Healthcare Group
- Health Canada

DISSEMINATION CONSUMERS

- HealthMedia
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- Hazelden Addiction Treatment and Recovery
- Staywell
- Kaiser Permanente
- eBay
- Blue Cross Blue Shield of Massachusetts
- Harvard Vanguard
- Humana
- Highmark
- Scott and White Health Plan
- Hawaii Medical Services Association
- Tufts Health Plan
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