

Nudging Mindset: Improving Health and Motivating Healthy Behaviors

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Stanford
MIND & BODY

Health in the U.S.

1/3 of adults have chronic conditions¹

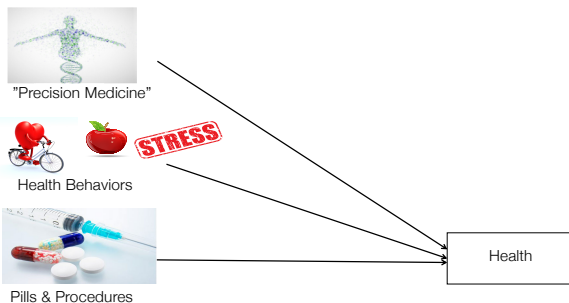
51% don't meet aerobic exercise guidelines²

76% don't eat enough fruit; 87% don't eat enough vegetables²

69% overweight or obese²

1. Centers for Disease Control & Prevention - FastStats, 2014.
2. Center for Medicare & Medicaid Services, 2012.

21st Century Healthcare



Existing solutions are
inadequate

in part, because
they inadvertently generate
unhelpful mindsets

MINDSET:

A lens or frame of mind which orients an individual to a particular set of associations and expectations

Influences affect, attention, motivation, and physiology

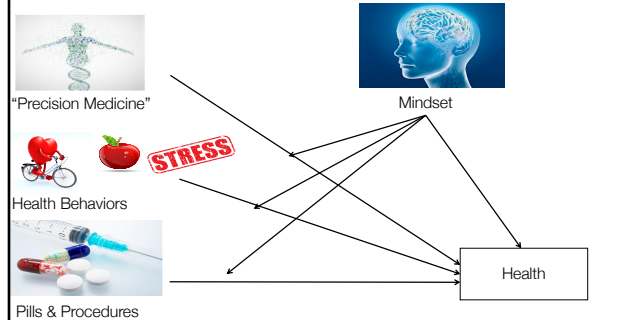


Influential Theory & Research

- Psychology: Beliefs, Expectancy Theory, Self-fulfilling Prophecies, Associative Networks, Implicit Theories
- Medicine: Placebo Effects
 - Effective in 60-90% of all diseases
 - Neurobiological mechanisms
 - Influences impact of real medications

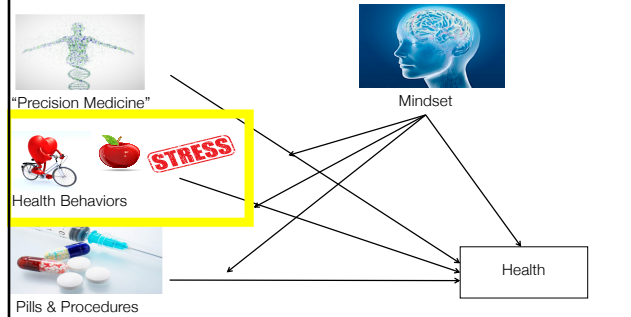


(e.g., Dweck, 2008; Taylor & Crocker, 1981; Langer, 1989; Eden, 1984;)
(e.g., Benson, H., 1996; Meissner, Kohls & Colloca, 2011; Price, Finnis, & Benedetti, 2008; Wager & Atlas, 2015)

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3 Key Questions

1. **Where** do mindsets matter?
2. **How**, exactly, do mindsets influence health?
3. **What** can we do to deliberately harness mindset effects to improve health and wellbeing?

21st Century Healthcare

• 59% - Pre or Full Hypertension, 77% - Overweight or Obese

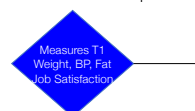


Yet.....

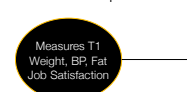
- 66.6% report not exercising regularly
- 36.8% report no exercise at all

Work as Exercise: Study Design

Intervention Group: N=44



Control Group: N = 40



The Surgeon General strongly advises that all adults should accumulate at least 30 minutes of physical exercise per day.

Did you know . . .
YOUR WORK IS GOOD EXERCISE!

It's true! Exercise doesn't have to be done at the gym. It's just good for your health. You can get the same benefits by doing active housework. It is simply a matter of knowing activities and using them smartly. (All you have to do is move around enough every day to burn at least 300 calories.)

According to the American College of Sports Medicine . . .

Changing linens for 15 minutes burns 40 calories!

Vacuuming for 15 minutes burns 50 calories!

Cleaning bathrooms for 15 minutes burns 60 calories!

This means that if you are actively vacuuming, changing linens, or cleaning for at least 2 hours a day, you are fulfilling the Surgeon General's recommendations for an active lifestyle. Now that is good work!

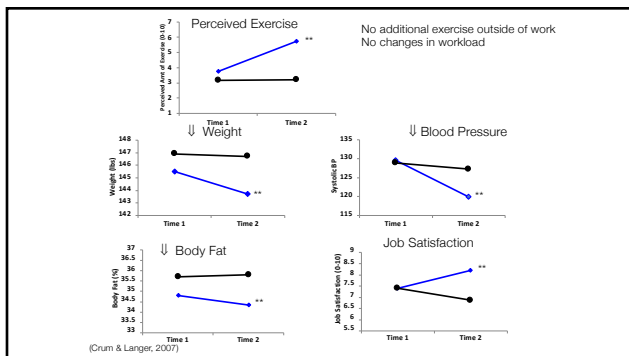
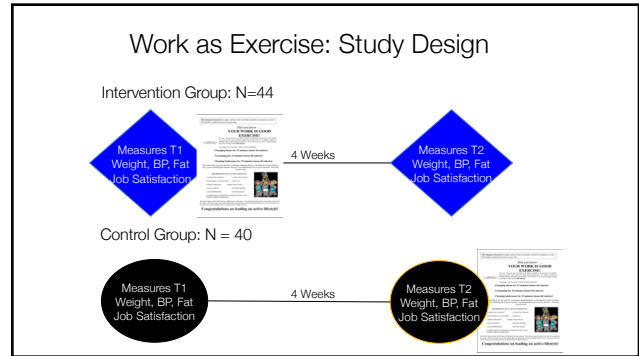
THE BENEFITS OF AN ACTIVE LIFESTYLE

1. A HEALTHY WEIGHT	2. A HEALTHY HEART
3. LESS LIKELY TO GET SICK	4. LESS FAT
5. MORE STRENGTH	6. MORE CREATIVITY
7. LESS ANXIETY	8. BETTER MOOD
9. LESS DEPRESSION	10. BETTER SLEEP
11. LOWER RISK OF DIABETES, HYPERTENSION, AND OTHER CHRONIC DISEASES	

The time it takes to burn 300 calories is different for each person. The calories reported above are for the average 60 lb woman. We do not want you to stop doing other essential things you must be doing outside work. We just want you to be aware that a day cleaning means a good source of daily exercise.

Congratulations on leading an active lifestyle!

(Crum & Langer, 2007)



Work as Exercise: Implications

Mindsets matter in behavioral health. In this case, shaping the benefits of exercise.

What about in other health behaviors such as diet or exercise?

Is the effect really direct and independent of behavior change?

TASTE SHAKES EARN \$75!

Researchers at Yale Medical School are testing bottled shakes. The goal of this research is to get taste ratings while simultaneously measuring how people react to different nutrient contents.

Your participation will involve:

- One 30-minute online questionnaire
- Two 2.5-hour lab sessions where you will evaluate a label, taste a shake, and provide some measurements (including blood samples)

For your time and efforts, you will earn \$75

Eligibility criteria:

- Age range: 18-35
- None of the following: diabetes, pregnancy, food allergies to lactose or egg

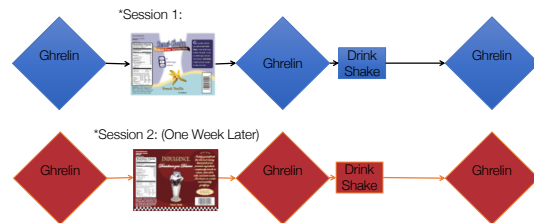
To enroll in the study call 203-432-8233 or email taste.study@yale.edu
 Website: <http://www.yccl.yale.edu/clinicaltrials>

Yale Center for Clinical Investigation
 333 Cedar Street, Suite 100, New Haven, CT 06510 www.yccl.yale.edu

Ghrelin

- Increases in ghrelin initiate hunger, slow metabolism
- Reductions in ghrelin follow food consumption, reduce hunger and speed up metabolism

Procedure: Within-Subjects Design



*Sessions counterbalanced amongst participants

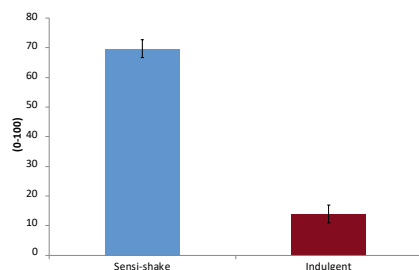
Mindset Manipulation

	"Sensi-Shake"	Actual	"Indulgence"
Calories	140	380	620
Total Fat	0g	13g	30g
Saturated Fat	0g	8g	18g
Cholesterol	5g	75g	115g
Sodium	200mg	136mg	460mg
Total Carbohydrates	20g	47g	63g
Sugars	20g	44g	56g
Fiber	0g	1g	2g
Protein	15g	19g	31g



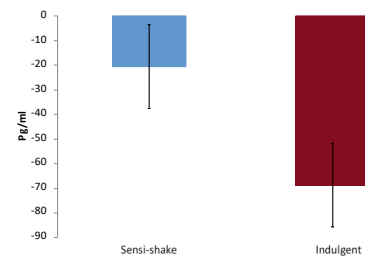
Crum, Corbin, Brownell, & Salovey (2013), Health Psychology

Results: Perceived Healthiness



Crum, Corbin, Brownell, & Salovey (2013), Health Psychology

Results: Post Consumption Change in Ghrelin



Crum, Corbin, Brownell, & Salovey (2013), Health Psychology

Mind Over Milkshakes: Implications

Mindsets matter in food consumption

Mindsets can have direct effects on physiology, holding the active ingredients constant

Information and labels can literally get under our skin and affect physiology as well as perception

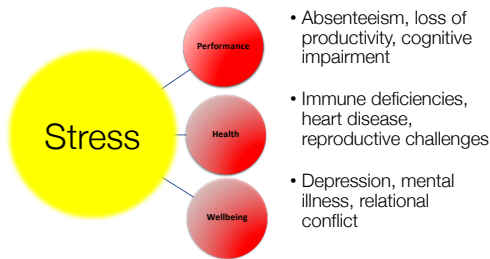
Where else might information be evoking unhelpful mindsets?



Crum, Corbin, Brownell, & Salovey (2013), Health Psychology

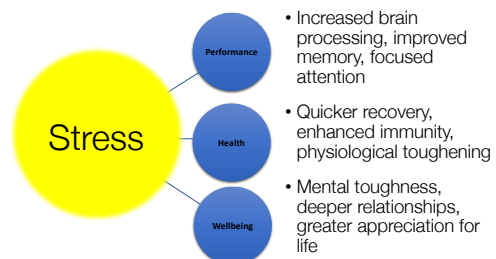


Stress is Debilitating: Evidence



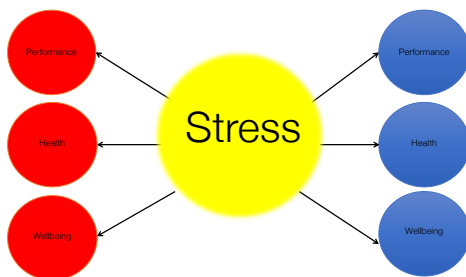
(e.g., Atkinson, 2004; Hammen, 2005; Goodkin & Visser, 2000; McEwen & Seeman, 1999; Sapolsky, 1996; Schneiderman et al., 2005; Schwabe & Wolf, 2010; Visser, 2000)

Stress is Enhancing: Evidence

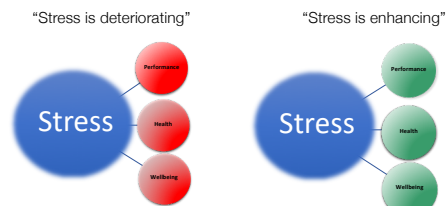


(e.g., Cahill et al., 2003; Dienstbier, 1989; Epel, McEwen & Ickovics, 1996; Hancock & Weaver, 2005; Park & Helgeson, 2006; Tedeschi & Calhoun, 2004)

The True Nature of Stress: A Paradox



Do our mindsets about stress influence the effects?



Stress Mindset Measure: 8 Items

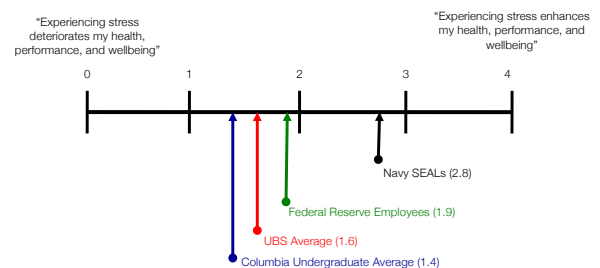
Please rate the extent to which you agree or disagree with the following statements. For each question choose from the following alternatives:

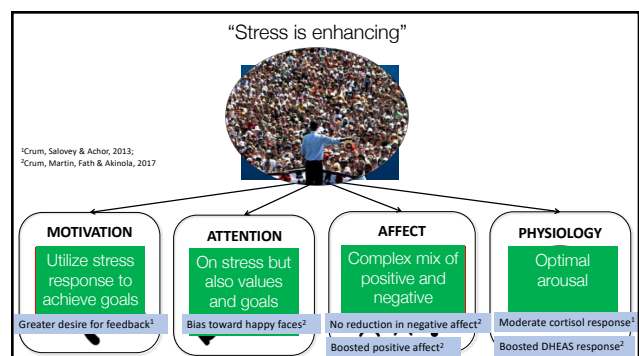
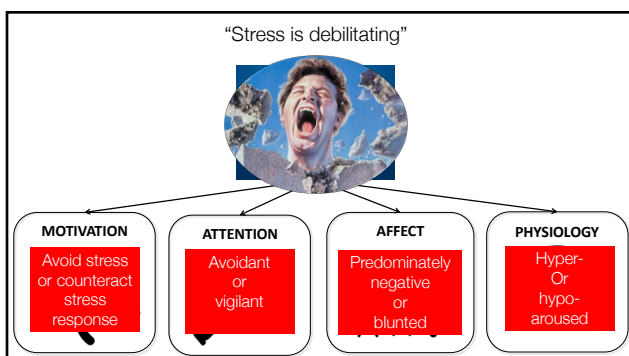
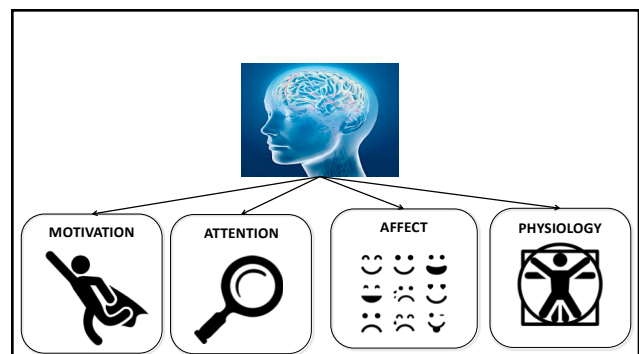
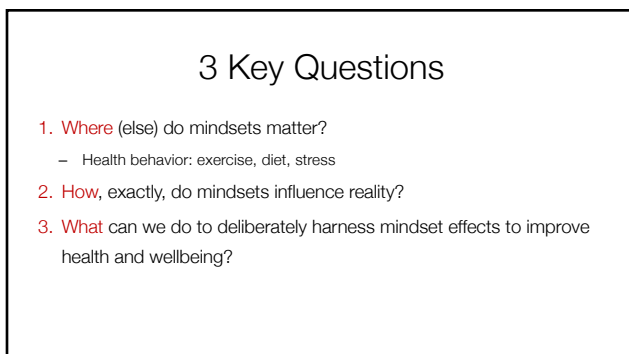
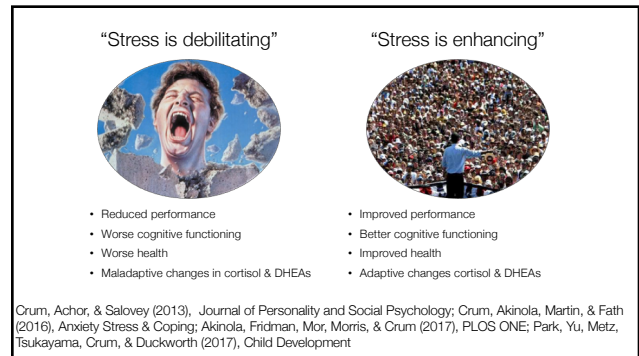
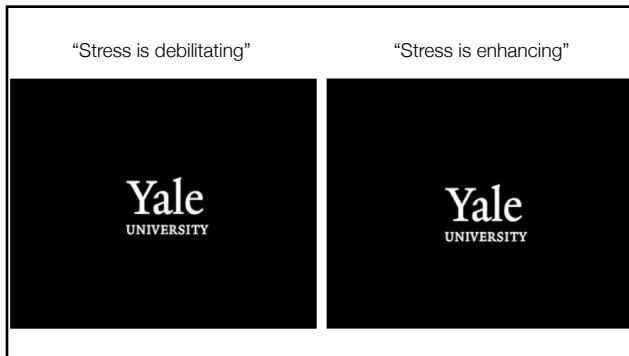
- 0 = Strongly Disagree
1 = Disagree
2 = Neither Agree nor Disagree
3 = Agree
4 = Strongly Agree

1. The effects of stress are negative and should be avoided.
2. Experiencing stress facilitates my learning and growth.
3. Experiencing stress depletes my health and vitality.
4. Experiencing stress enhances my performance and productivity.
5. Experiencing stress inhibits my learning and growth.
6. Experiencing stress improves my health and vitality.
7. Experiencing stress deteriorates my performance and productivity.
8. The effects of stress are positive and should be utilized.

Crum, Salovey & Achor (2013) JPSP

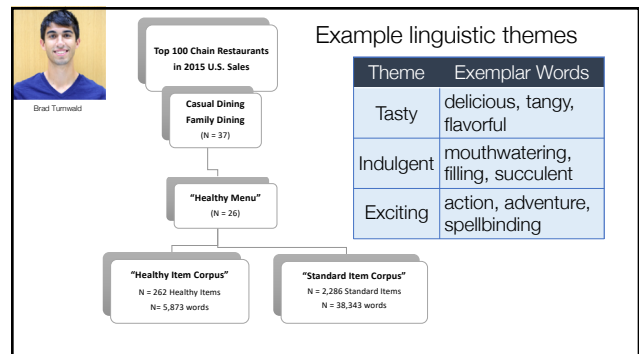
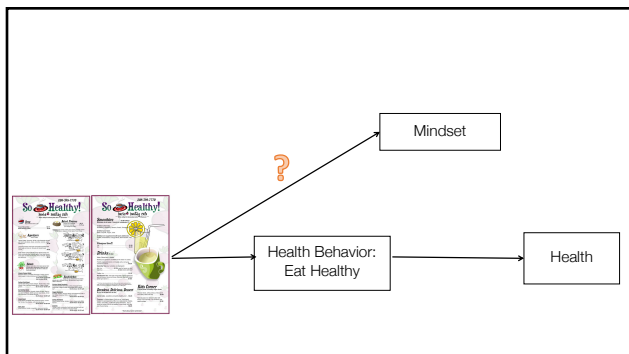
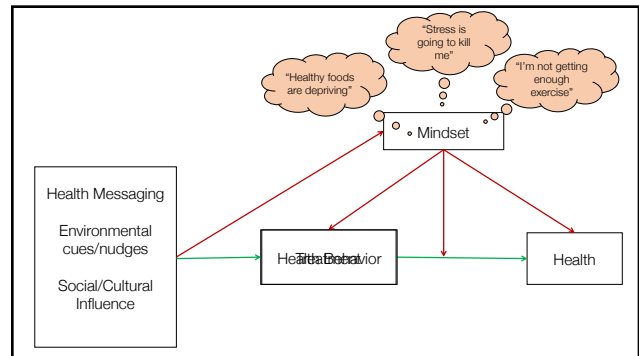
Stress Mindset





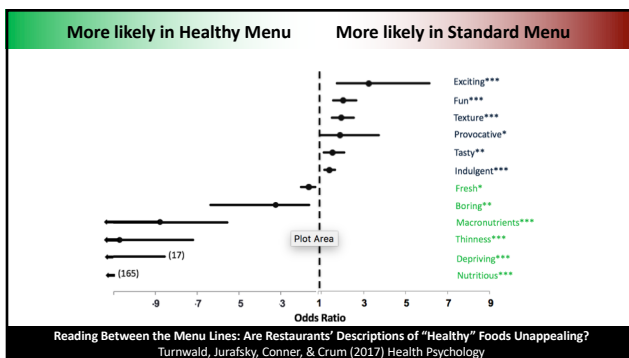
3 Key Questions

1. **Where** (else) do mindsets matter?
 - Health behavior: exercise, diet, stress
2. **How**, exactly, do mindsets influence reality?
 - Generate cascade of effects on mood, attention, motivation and physiology
3. **What** can we do to deliberately harness mindset effects to improve health and wellbeing?



Example linguistic themes

Theme	Exemplar Words
Tasty	delicious, tangy, flavorful
Indulgent	mouthwatering, filling, succulent
Exciting	action, adventure, spellbinding



What if we changed the labels?

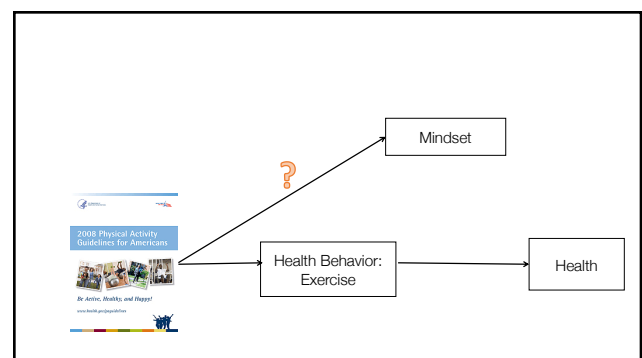
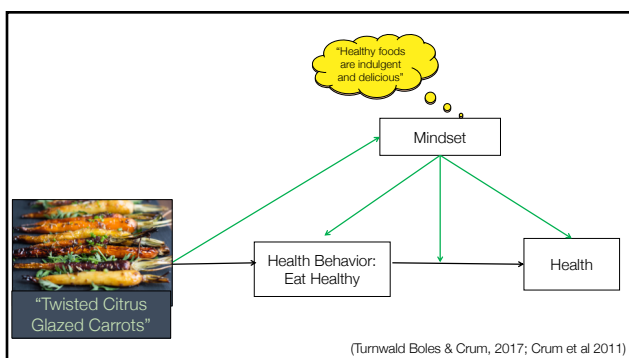
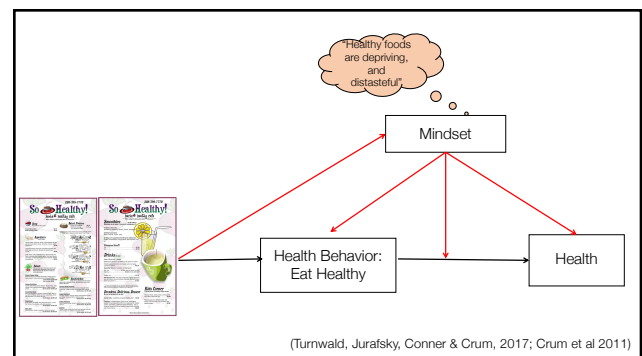
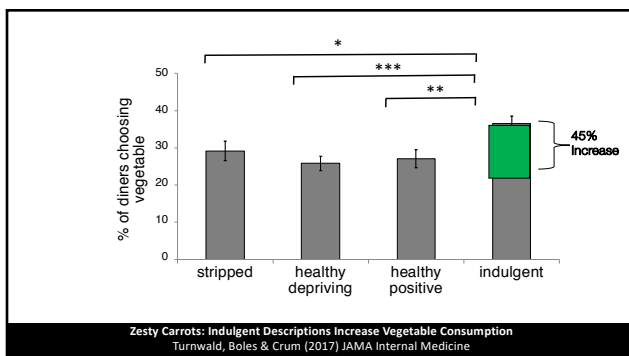
• N = 607 diners per day
• 2 hour lunch (11:30 – 1:30)
• Sept – Dec 2016 (10 weeks)

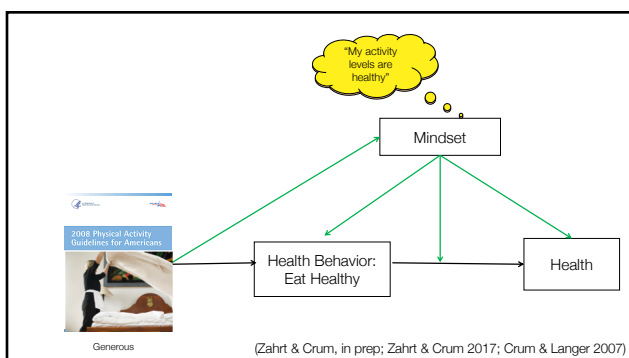
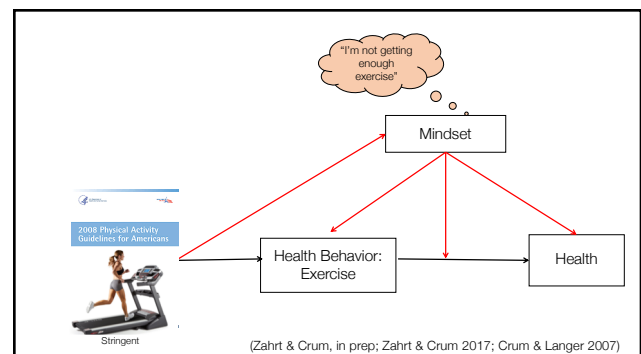
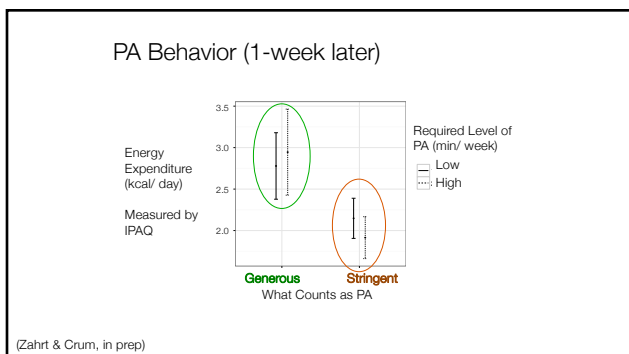
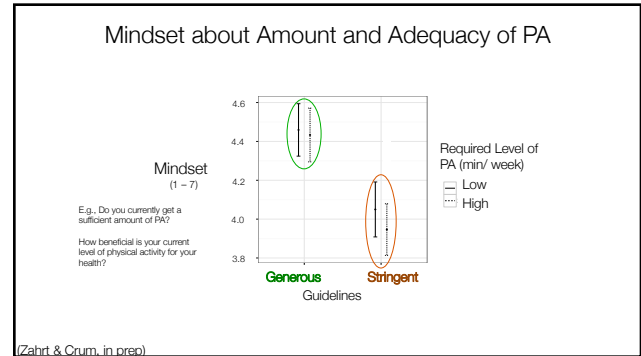
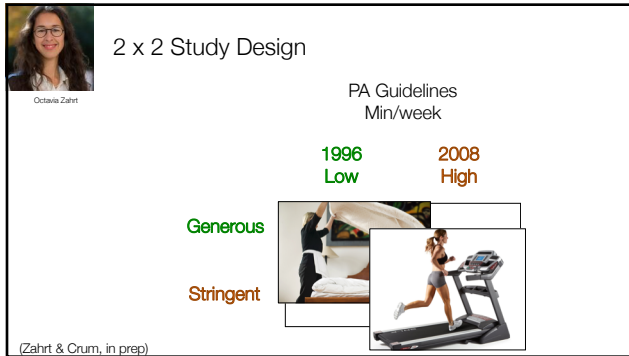
Brend Turnwald
Danielle Boles

What if we changed the labels?

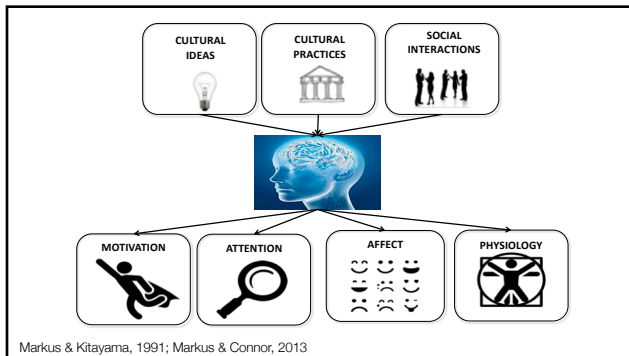
1. Stripped: "Carrots"
2. Healthy Restrictive: "Reduced cholesterol carrots"
3. Healthy Positive: "Vitamin-packed carrots"
4. Indulgent: "Twisted Citrus Glazed Carrots"

Zesty Carrots: Indulgent Descriptions Increase Vegetable Consumption
Turnwald, Boles & Crum (2017) JAMA Internal Medicine





- ### 3 Key Questions
- Where** (else) do mindsets matter?
 - Health behavior: exercise, diet, stress
 - How**, exactly, do mindsets influence health?
 - Generate cascade of effects on mood, attention, motivation and physiology
 - What** can we do to deliberately harness mindset effects to improve health and wellbeing?
 - Alter cultural messages and products to elicit more helpful mindsets

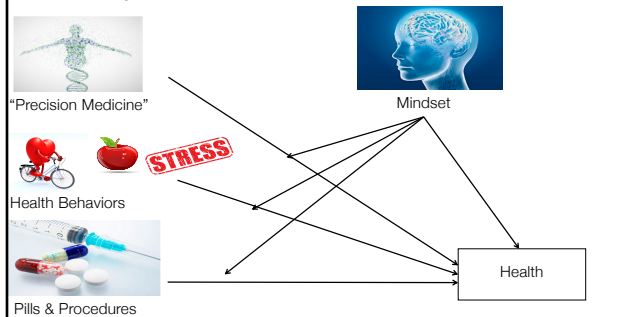


Mindset: Admirable Qualities

- Can be “nudged” relatively easily and cheaply
 - Labeling
 - Information (e.g., short multimedia film clips)
 - Educational trainings
- Influence behavior and health by triggering a cascade of mechanisms
 - Motivation
 - Attention
 - Affect
 - Physiology
- Can have lasting (self-fulfilling and self-perpetuating) effects
 - More research is needed

(e.g., Crum & Langer 2007; Dweck, 2008; Crum et al 2011; Yeager & Walton, 2011; Crum et al., 2013; Turnwald Boles & Crum, 2017; Zahrt & Crum 2017)

21st Century Healthcare



Stanford MIND & BODY LAB

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 Email: crum@stanford.edu

Thoughts? Ideas? Questions? Suggestions?

NIH National Institutes of Health

presence. The Art & Science of Human Connection

Foundation for the Therapeutic Encounter (FTE)

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