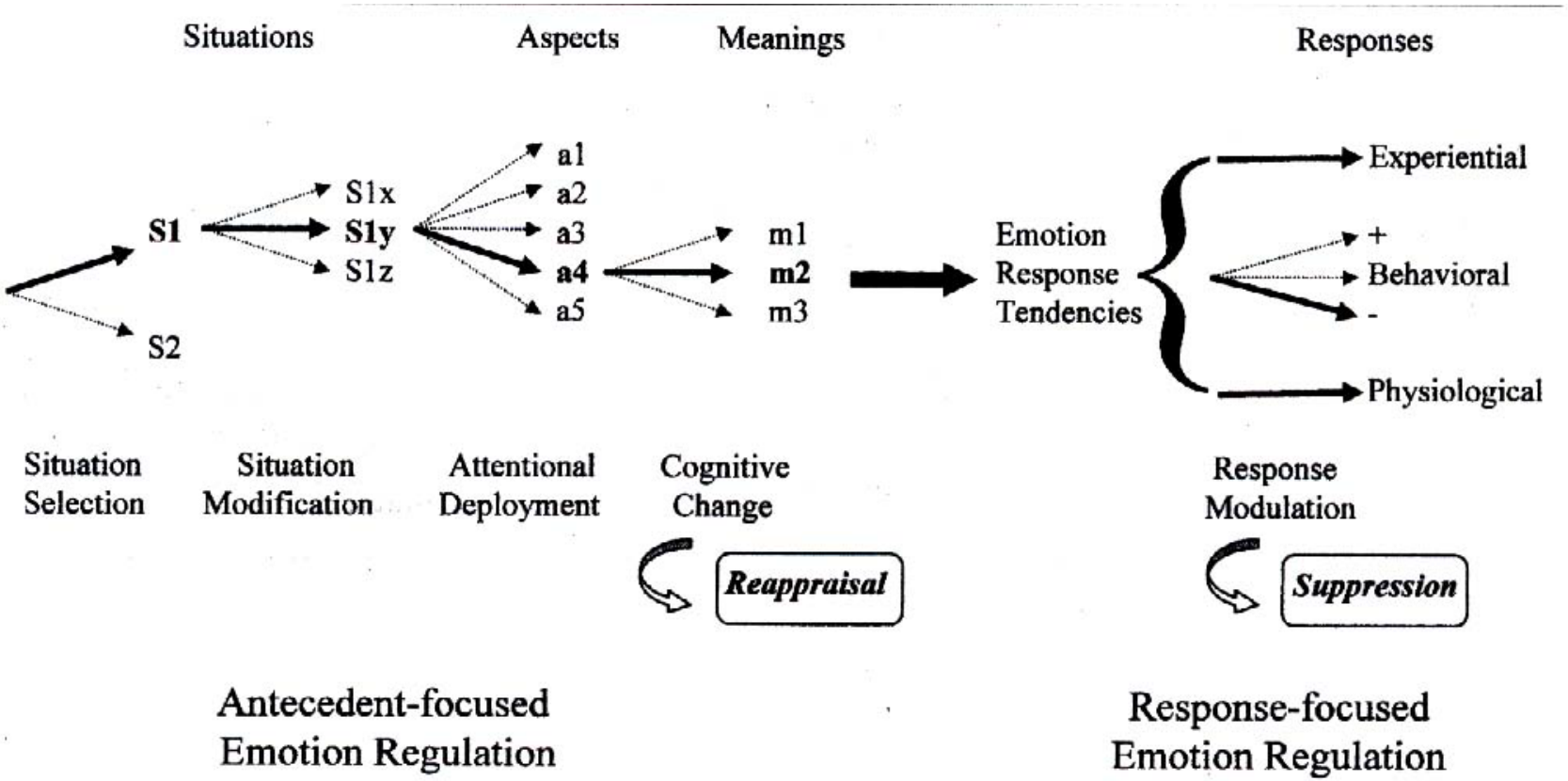
Emotion Regulation

James Gross

- "Timing is everything"
- The earlier in the "emotional cascade" one tries to alter their experiences, the more diffuse the effects
- The later one starts, well . . .

"Process Model of Emotion Regulation"



Antecedent Strategies

- Occur prior to full-blown emotional response tendencies
- Situation selection
  - Do I go to the funeral or not?
- Situation modification
  - Do I try to lighten the mood or not?
- Attentional deployment
  - Do I focus on pictures of deceased during happier days, or when s/he was sick?
- Cognitive change
  - Is this a loss? Or has the deceased's pain and suffering finally ended? As well as the family's?

Response-Focused Strategies

- Suppression 내가 하는거 쿠
  - "white-knuckling it"
- Exaggeration

“Emotion Response Tendencies”

- Experiential
  - Emotional valence or discrete emotions
- Behavioral
  - Facial expression, postural changes, behavioral movements
- Physiological
  - Sympathetic nervous system
  - Parasympathetic nervous system

Reappraisal vs. Suppression: Hypotheses relative to "natural viewing"

- Reappraisal
  - Alters the trajectory of all three response systems

- Suppression
  - Reduces behavioral expression
  - Produces no change in emotional experience
  - No change in autonomic arousal (or INCREASED autonomic arousal due to effort)

Past work inconsistent with hypothesis

- Physically preventing smiling led to decreased amusement while reading cartoons
    - E.g., Strack, Martin, & Stepper, 1988
- Decreasing pride-expressive facial display decreased experienced pride
    - E.g., Stepper & Strack, 1993
- Facial Feedback Hypothesis!

Experimental data specific to emotion regulation

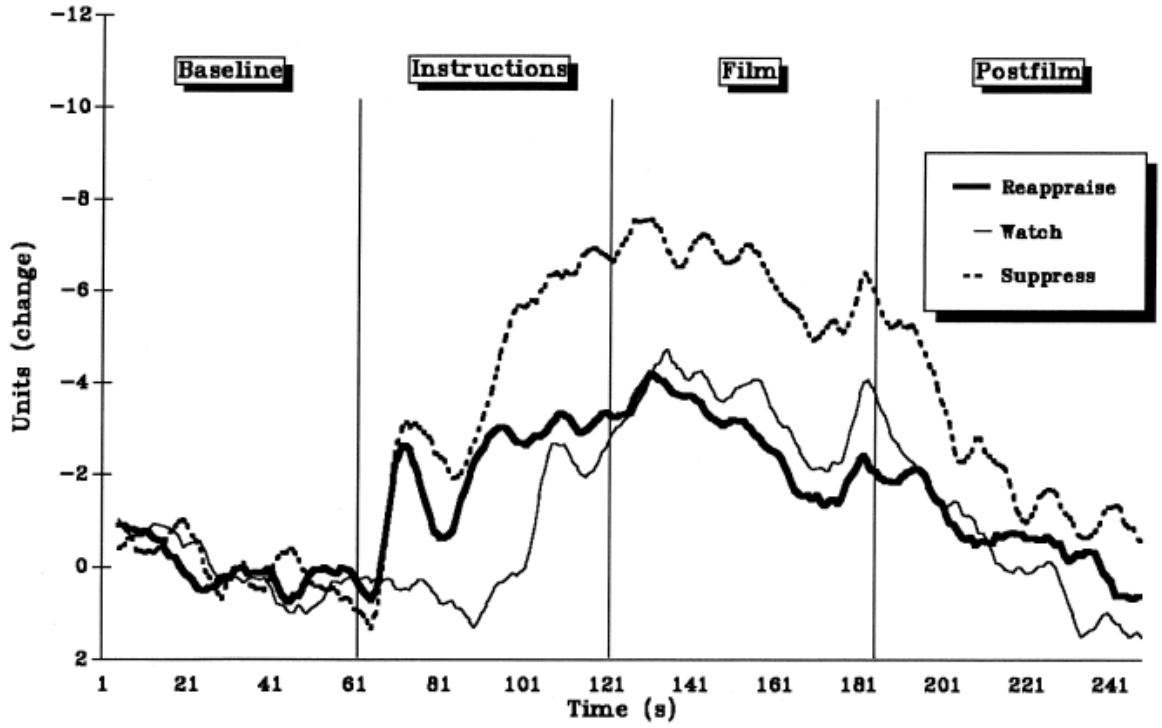
- Gross, 1998
- Stimulus is an arm amputation video
- Instructions
  - "watch in such a way that you don't feel anything at all" (reappraise)
  - "hide your emotional reactions" (suppress)
  - No instructions (control)

Results

- Affective
  - Reappraisal produced significantly less self-reported disgust, relative to NW and suppression
  - NW = suppression
- Behavioral
  - Both reappraisal and suppression decreased facial display relative to NW condition
- Autonomic . . .

무의식적인 반응 Autonomic

- Suppression associated with greater sympathetic arousal
  - Attributed to effort



Affect?

- Could the impact of reappraisal on disgust be due simply to “demand characteristics”?

- No!
  - Jackson et al. (2000) replicated this research using a startle paradigm

Other studies looked at other discrete emotions (Gross & Levenson, 1997)

- Suppression of sadness & amusement

- Physiologically
  - Suppression increases sympathetic arousal

- Emotionally
  - Suppression decreases amusement, but not sadness

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Harris (2001)

- Suppression of embarassment produced increased blood pressure . . .

- . . . but no changes in self-reported embarrassment!

If you harken back to this . . .

- Physically preventing smiling led to decreased amusement while reading cartoons
    - E.g., Strack, Martin, & Stepper, 1988
- Decreasing pride-expressive facial display decreased experienced pride
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- Facial Feedback Hypothesis!

The suppression has differential emotional effects

- To negative stimuli
  - Self-reported negative affect is not impacted
- To positive stimuli
  - Self-reported positive affect is reduced!

Are the increased sympathetic effects due to increased effort?

- Probably
- Suppressing to a non-emotional stimulus
  - Decreases the relatively little behavior displayed "naturally" . . .
  - . . . without increases in sympathetic activation
- It appears that the sympathetic activation is associated with the effort required to override a significant prepontent response!

BRIEFLY: Individual differences in habitual use of reappraisal/suppression

- Use a trait measure of suppression and reappraisal, known as the Emotion Regulation Questionnaire (ERQ)

- Hypotheses:
  - Higher Suppression:
    - Decreased emotional expression (PA and NA)
    - Less positive experience; comparable negative experience
  - Higher Reappraisal:
    - Less NA experience and expression
    - Higher PA experience and expression

BRIEFLY: Individual differences in habitual use of reappraisal/suppression

- Using self- and peer-reports:
- Higher Suppression:
  - Lower PA experience and expression (check!)
  - Less NA expression (check!)
  - Either same or *more* (!!) NA experience (quasi-check!)
- Higher Reappraisal:
  - Less NA experience and expression (check!)
  - Higher PA experience and expression (check!)

Do these differences have important long-term effects?

- YES!!!! On such important constructs as:
- Life Satisfaction (higher for reappraisal; lower for suppression)
- Well-being (likewise)
- Depression (opposite effect)

Cognitive Effects of Reappraisal and Suppression

- Reappraisal predicted to be less cognitively costly, because it's initiated early and defuses the emotional experience

- Suppression thought to be cognitively costly, as it continues throughout the emotional experience

Richards & Gross, 2000; Study 1

- Showed participants a film of an marital fight, which causes child to cry

- Surprise, cued-recall test of the film
  - Natural-watch > suppression (no reappraisal group)

Richards & Gross, 2000; Study 2

- Showed participants either low- or high- NA-inducing slides
  - Given information about each slide
- This time, 3 conditions (natural-watch, reappraise, and suppress)
- Surprise, cued memory test
  - Verbal (write down information about each of 4 slides)
  - Nonverbal (pick which of 4 slides was previously presented)

Results

- Verbal memory test
  - Suppression < natural-watch = reappraisal
- Nonverbal memory test
  - No differences between groups!

- Suggests that cognitive resources used in suppression are largely verbal ("keep your face still")
  - May be true of reappraisal, too, but at least they are processing the information!

Richards & Gross, 2000; Study 3

- Assessed *habitual* suppression and reappraisal (i.e., the ERQ)
- Assessed memory
  - Subjective
    - Memory for conversations
  - Objective
    - Memory of emotion regulation episodes reported by the participant in a diary for the 2 weeks leading up to testing

Results

- Habitual suppression associated with significantly impaired memory

Table 1. *Cognitive Consequences of Reappraisal and Suppression (Controlling for Neuroticism and Social Desirability)*

	Suppression		Reappraisal
Memory	AEQ	ERQ-S	ERQ-R
Self-reported	−.31*	−.23*	.09
Objective	−.33*	−.27*	.05

아니 100% 동의 (내가 저자)

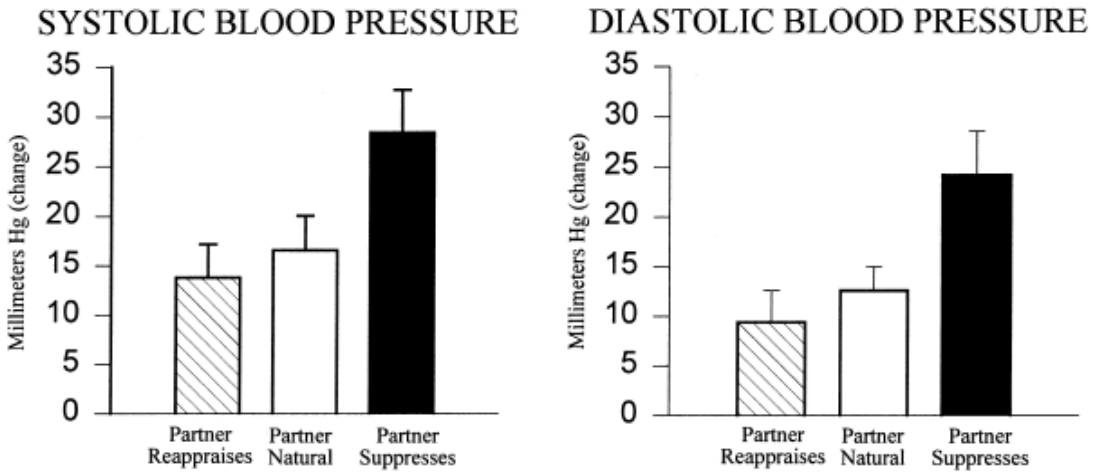
Social Consequences: Butler et al., 2002

- Unacquainted pairs of women watched a film on an upsetting topic, then discussed the film

- Unbeknownst to one person, her partner was given instructions on how to interact:
  - Suppress
  - Reappraise
  - Natural

Results

- Amazingly . . .
- BP was significantly increased when interacting with a suppressor



Related to habitual ER

- People who habitually use suppression are, based on peer reports:
  - Less well-liked
  - Less likely to share their experiences
  - Receive less social support
- Exact opposite for reappraisers

Mauss et al., 2007; Automatic Emotion Regulation

- OK, we know what . . .
  - Emotions are
  - (Controlled, directed?) emotion regulation is

- What is automatic ER?
  - Nonconscious 이게 제일 중요함
  - Implicit
  - Impulsive

Automatic Emotion regulation

- What is automatic ER?
- "A goal-driven change to any aspect of one's emotions *without* making a conscious decision to do so, *without* paying attention to the process of regulating one's emotions, and *without engaging in deliberate control*. In other words, AER is based on the automatic pursuit of the goal to alter the emotion trajectory." (italics and underline added, p. 3)

According to Mauss & Gross

- Controlled ER:
  - Requires attentional resources
  - Is volitional
  - Is driven by explicit goals

- Automatic ER:
  - Initiated by simple registration of sensory inputs
  - Which activates knowledge structures (e.g., schemas, scripts)
  - That then shape other psychological functions (e.g., the emotion trajectory)

Important!

- AER is thought not to require deliberate effort!!!
  - We will revisit this later in the class (Pu et al., 2010)

- BUT it is thought to involve many ER strategies
  - Attentional deployment
  - Appraisal of stimulus
  - Response-focused behavioral change, etc.

AER can be . . .

- Maladaptive!
  - E.g., "repression" (not labeling or recognizing negative emotions) causes people to have
    - Decreased self-reported NA to negative stimuli, but
    - Increased sympathetic arousal
    - Impaired cognitive and social skills
- Adaptive!
  - E.g., older people experience and remember PA more (the "positivity effect")
    - Argued to be automatic, in part because of cognitive decline with aging
    - Older adults pay more attention to positive relative to negative stimuli! (Carstensen & Mikels, 2005)

Experimental AER; Mauss et al., 2006 Study 2

- Measured AER tendencies via the Implicit Association Test (IAT)
  - Need to categorize words 1 at a time
    - Positive (e.g., 'gold')
    - Negative (e.g., 'gloom')
    - Emotion control (e.g., 'controlled')
    - Emotion expressive (e.g., 'express')
  - Faster responses when Positive-Control button are the same indicates positive evaluation of emotional control

Want to try an IAT?

- Go to:
  - https://implicit.harvard.edu/implicit/demo/takeatest.html

Experimental AER; Mauss et al., 2006 Study 2

- Then experienced lab-based anger provocation
- People with a positive evaluation of emotional self-control
  - Reported less anger
  - Less global NA (e.g., sadness, anxiety, etc.)
  - Same cardiovascular responding

A blast from the past: AER can be . . .

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What is it that makes AER adaptive or maladaptive?

- Well, it's obvious enough:

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- Defensiveness, repression, spontaneous suppression
  - More response-focused → maladaptive!

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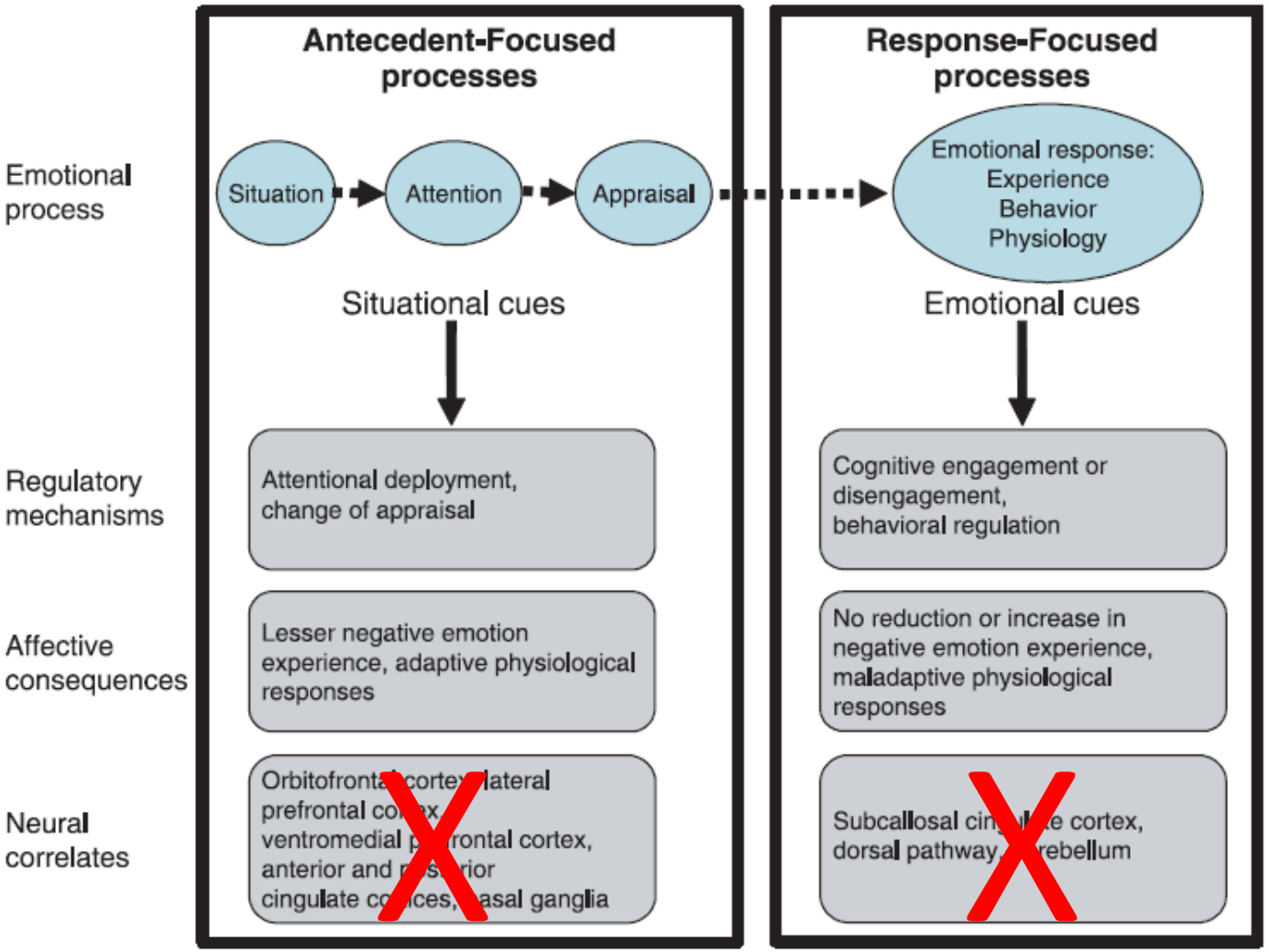
- Altering emotional situations, attention paid to stimuli, and automatic reappraisal
  - More antecedent-focused → adaptive!

Model of AER


Antecedent-Focused processes
Response-Focused processes
Emotional process
Situation
Attention
Appraisal
Emotional response:
Experience
Behavior
Physiology
Situational cues
Emotional cues
Regulatory mechanisms
Attentional deployment, change of appraisal
Cognitive engagement or disengagement, behavioral regulation
Affective consequences
Lesser negative emotion experience, adaptive physiological responses
No reduction or increase in negative emotion experience, maladaptive physiological responses
Neural correlates
Orbitofrontal cortex, lateral prefrontal cortex, ventromedial prefrontal cortex, anterior and posterior cingulate cortices, basal ganglia
Subcallosal cingulate cortex, dorsal pathway, cerebellum

Tice et al. (2001)

- The conflict:
- Affect Regulation
  - Improving mood
- Impulse Control
  - Stifling short-term pleasures to achieve distal rewards
    - Going to college?

Short-term versus Long-term views

- Impulse control and optimal self-regulation require a long-range focus on distal goals

- Emotional distress shifts one's focus to the immediate present
  - "The promise of feeling better in 1 or 2 years is probably too remote to console most people who are acutely upset here and now." (p. 53)

Great quote (love the writing!)

- “When under emotional distress, people may give priority to the short-term goal of feeling better and in the process may sacrifice long-range goals such as slimness, sobriety, and thrift.” (p. 53).

Evidence of emotion → self-regulation link

- Overweight individuals report overeating when they are anxious or depressed (Logue, 1993)
- Inducing bad moods in dieters increases food intake
  - E.g., Greeno & Wing, 1994; Slochower & Kaplan, 1980
- Same thing for smoking, alcohol intake
  - E.g., Brownell et al., 1986; Sayette, 1993
- . . . And gambling, shopping
  - E.g., O'Guinn & Faber, 1987; Peck, 1986

Evidence of emotion → self-regulation link

- Cycle of food intake or drug abuse among dieters and drug abusers trying to abstain
  - Abstain → relapse (small) → anger/sadness over relapse → relapse (large)

Evidence of emotion → self-regulation link

- Delay of gratification: Long-time prototype of self-control
- Must resist immediate impulses in favor of the enlightened pursuit of long-term interests (e.g., Mischel, 1996)

Intertemporal Choices

- Intertemporal choices, decisions involving trading off costs and benefits over time, are among the most important choices people routinely make
- People regularly decide:
  - What/how much to eat
  - how much to exercise
  - whether to smoke
- Decisions have immediate consequences (e.g., enjoyment of that extra bite of cake), and long-term consequences on health and medical costs (e.g., the risk of heart problems, diabetes, and obesity)
- People also frequently decide how much to postpone consumption in order to save for retirement, children's college funds, and other big ticket purchases

Emotion and delay of gratification

- Negative emotions cause people to become increasingly impulsive, demanding immediate gratification in lieu of larger, future rewards
  - Mischel et al., 1968, 1973; Schwartz & Pollack, 1977; Fry, 1975; Wertheim & Schwartz, 1983

Why does distress impair self-regulation? Three prior hypotheses

- 1) Psychodynamic: emotional distress gives rise to self-destructive tendencies
- 2) Cognitive Capacity: emotional distress impairs rational thought and therefore undermines self-regulation ability
- 3) Motivation: emotional distress impairs the motivation (NOT capacity) to regulate oneself in a normal, optimal fashion
  - 3 mechanisms (next slide)

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Motivation (3 mechanisms)

- 1) Apathy: Distress may cause person to stop caring about pursuing positive, desirable options
- 2) Rebellion: Distress may cause person to rebel against the seeming constraints of normal, proper behavior
- 3) Self-efficacy; Distress may cause person to feel that s/he is incapable of achieving long-term goals

Alternative Hypothesis (Tice et al.)

- Self-regulation failure may be strategic
- In short, distress makes the goal for immediate pleasure more important than the goal of long-term success

Three studies -- Commonalities

- Emotion induction from reading real-life stories. Story about a person running a red light and hitting another car.
  - Sad story: Child in car died; imagine being driver and write about emotions felt
  - Happy story: Child was saved by bystander. Imagine being bystander, write about emotions felt

Three studies -- Commonalities

- Mood freezing or not
  - Study 1: Eating food does not improve mood; in fact, it prolongs one's current mood
    - Problem due to asymmetry: People in the "freeze" condition heard about a link between food intake and emotion; people in "change" condition heard nothing about the relationship between food and emotion.

Three studies -- Commonalities

- Assessed impulse control
  - Study 1: Amount of pretzels, chocolate chip cookies, and goldfish eaten during purported "unrelated pilot study"

Study 1 -- Results

- Amount eaten decreased in the distress condition when people thought that their moods were frozen (i.e., “eating doesn’t alter emotion”)

Total Amount of Snack Foods Eaten

Condition	Mood freeze	Changeable mood
Happy	0.49 (1.78)	−0.35 (2.30)
Distress	−0.89 (1.62)	0.79 (3.00)

Study 1 -- Results

- People eating more in the happy-mood freeze condition was likely unintended. By telling people that eating prolongs one's current mood, people may have eaten more to stay in PA state!

Total Amount of Snack Foods Eaten

Condition	Mood freeze	Changeable mood
Happy	0.49 (1.78)	−0.35 (2.30)
Distress	−0.89 (1.62)	0.79 (3.00)