

**Disgust: The body and soul  
emotion: From toilet to  
terrorism**

Paul Rozin

University of Pennsylvania

Canada, May 31, 2010



# “Basic emotions”

- Happiness
- Surprise
- Sadness, anger, fear
  - disgust



1

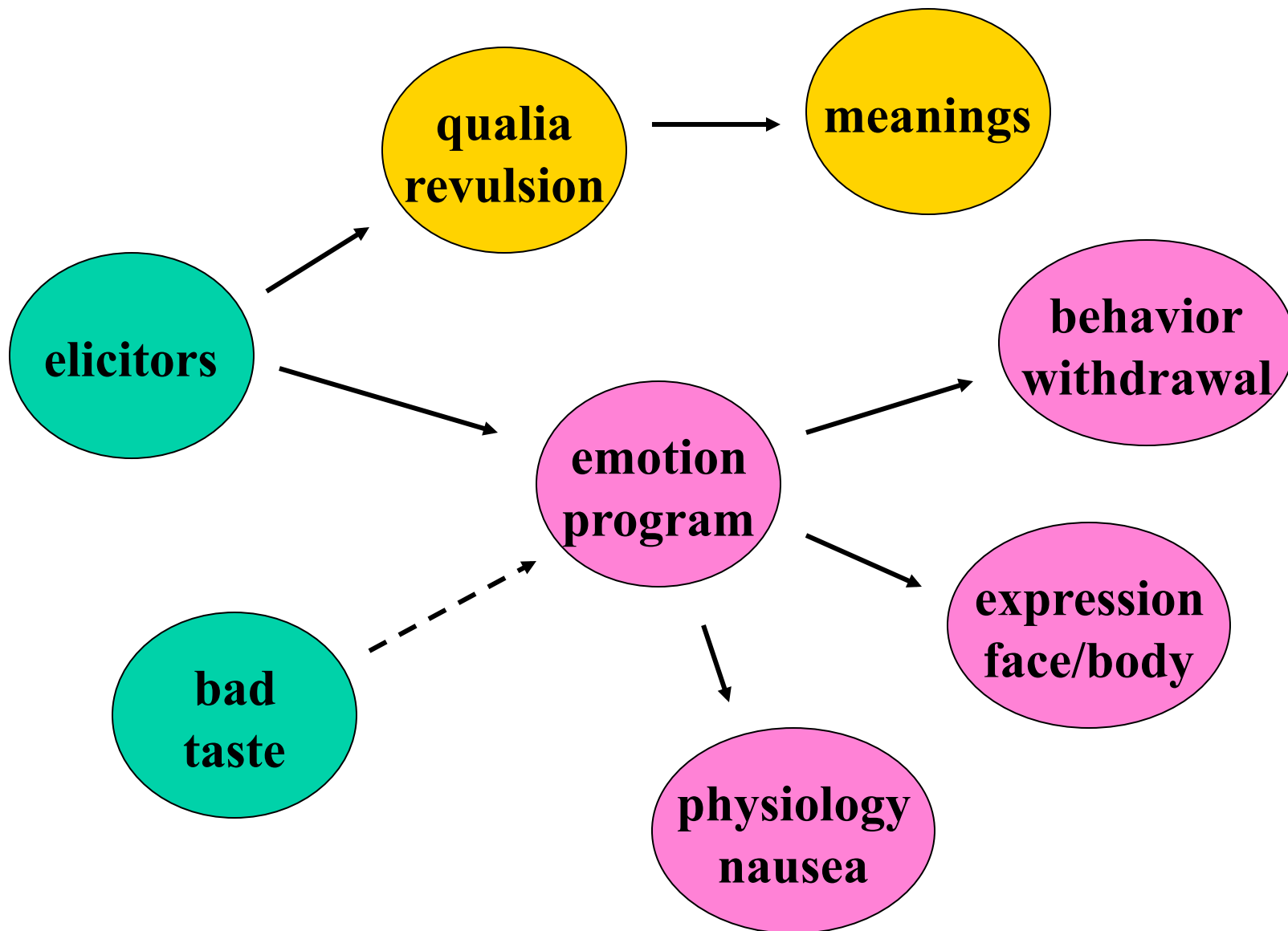


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3

# Disgust





# Food origins of Disgust

# Food origins of disgust

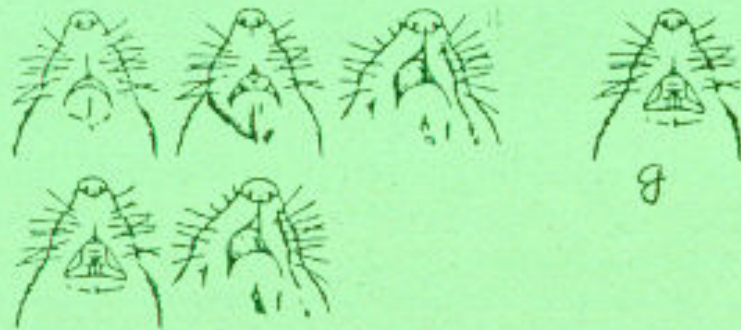
- Linguistic (dis-GUST)
- Link to nausea
- Facial expression
  - Oro-nasal rejection



Ingestion  
Sequence



Mixed  
Response  
Sequence



Aversion  
Sequence











Andras Angyal, 1943

DISGUST:

“Revulsion at the prospect of oral  
incorporation of an offensive  
substance.”

# Preadaptation

Ernst Mayr

Mouth

# Preadaptation and Disgust

(bad taste)



core disgust



April Fallon

# Taxonomy of food avoidance

	Distaste	Danger	Disgust	Inappropriate
Sensory	+		(+)	
Anticipated consequences		+	(+)	
Ideational			+	+
Examples	beer lima beans	allergy toxin	worms raw meat	paper sand



Minute  
APPLE JUICE  
NEW!  
100% PURE - READY TO DRINK





APR 06 2004

Minute Maid  
APPLE JUICE

NEW!

100% PURE - READY TO DRINK

# Disgust and contagion

- Likely link to pathogen avoidance in human evolution

# Features of contagion

- Physical contact is necessary
- Permanent effects
- Dose insensitivity
- Any property may be transmitted
- Negative bias

# Framing

- Dogs
- Chairs
- Doorknobs
- The Hebrew dietary laws







# Magical thinking

- Contagion
- Similarity
  - Image = object





Jonathan Haidt  
Clark McCauley

# Animal nature reminders

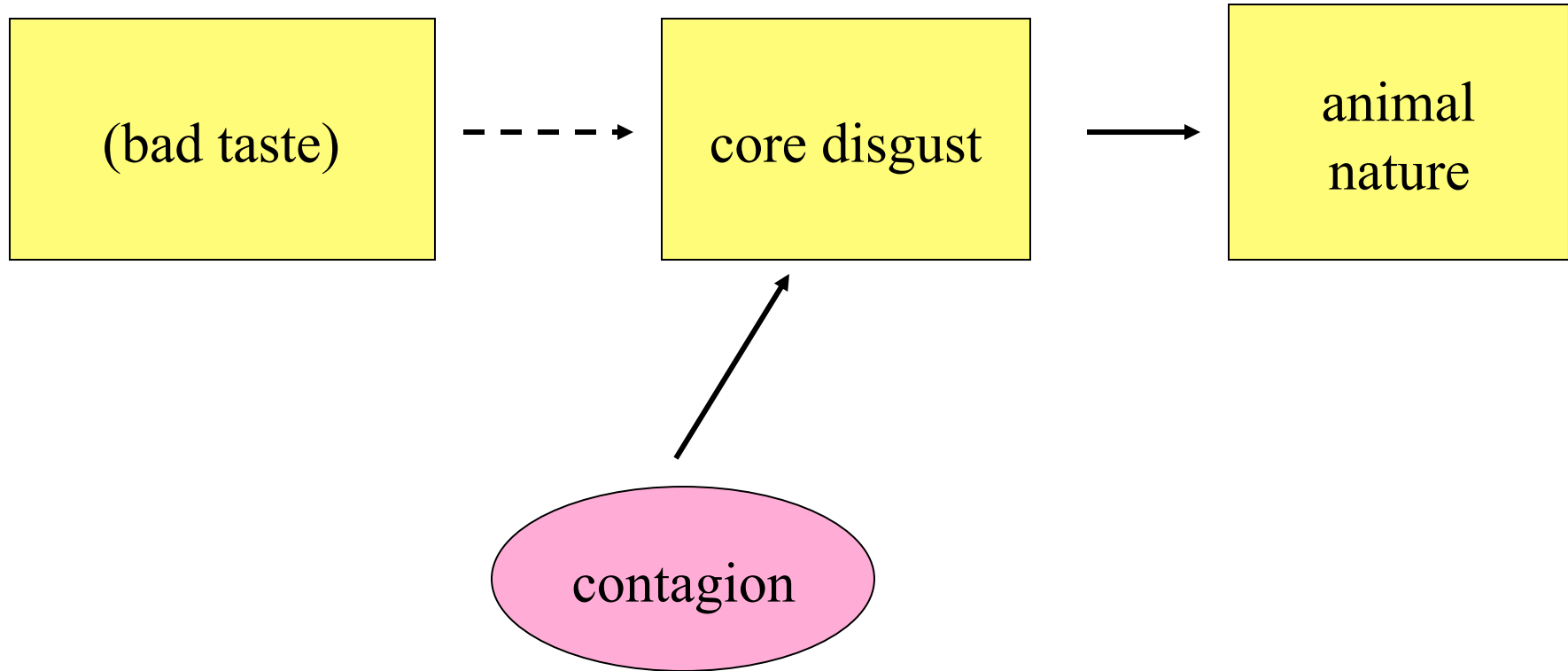
- Inappropriate sex
- Poor hygiene
- Gore/ Body boundary violations
- Death

**"People, in the course of the civilizing process, seek to suppress in themselves every characteristic that they feel to be animal."**

**Norbert Elias, *History of Manners***



# Preadaptation and Disgust



# Disgust Scale

(Haidt, McCauley & Rozin, 1994)

- Food (e.g., decaying, viscera)
- Body Products
- Certain animals
- Poor hygiene
- Body envelope violations
- Inappropriate sex
- Death

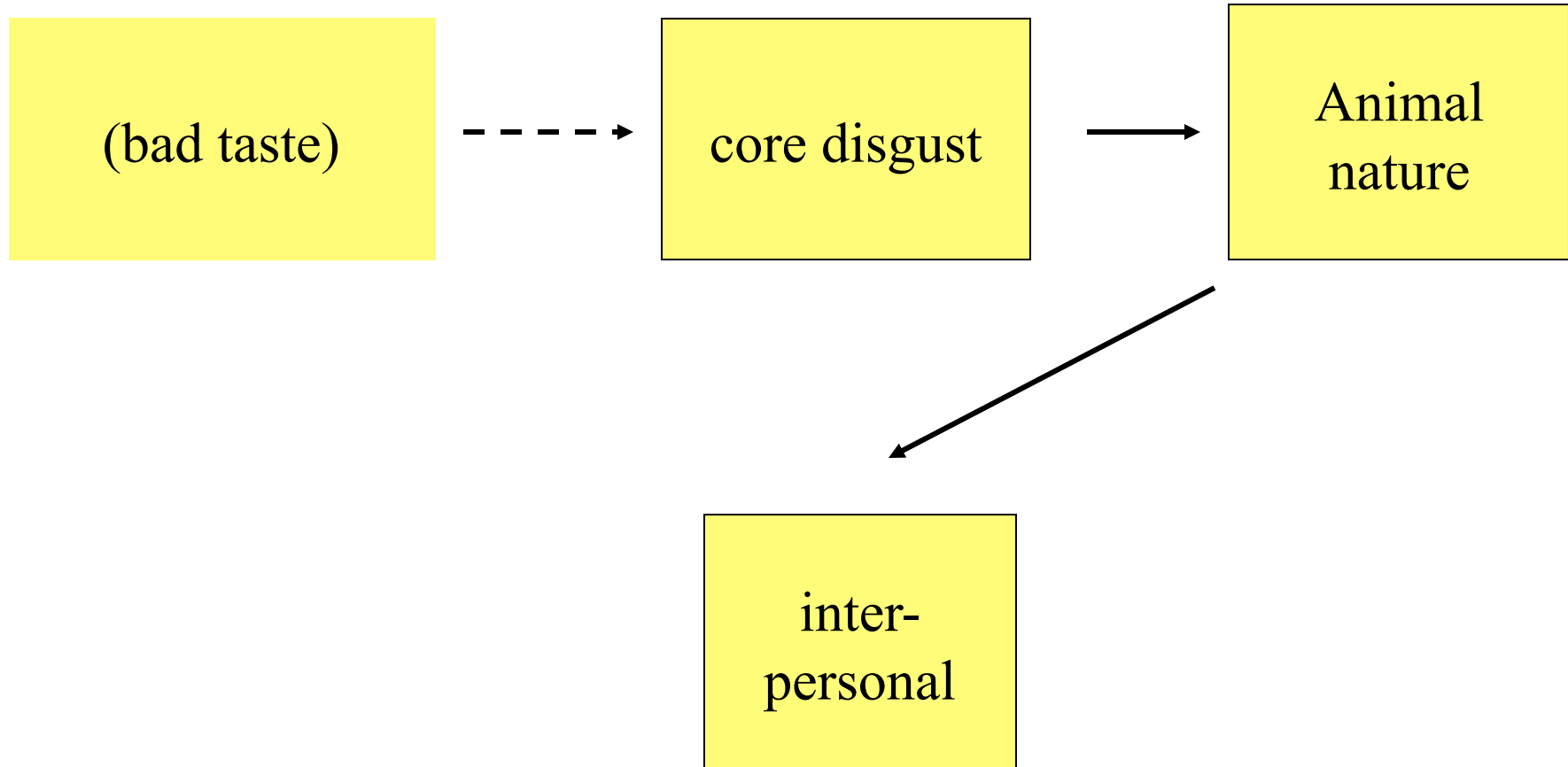
# Mortality fear

- Terror management theory
- Ernst Becker and the Denial of Death
- Disgust as an avoidance mechanism

## Items showing highest correlation with total D-Scale score

Rank	R	Domain	item
1	.57	Body products	You see a bowel movement left unflushed in a public toilet
2	.54	Body products	While you are walking through a tunnel under a railroad track, you smell urine
3	.53	Death	Your friend's pet cat died, and you have to pick up the dead body with your bare hands
4	.52	Animal	You are walking barefoot on concrete, and you step on an earthworm
5	.50	Death	It would bother me tremendously to touch a dead body
6	.48	Sex	You hear about an adult woman who has sex with her father

# Preadaptation and Disgust



# Interpersonal Disgust

- Contact with strangers



*Whitman's*

**Sampler**

CHOCOLATES & CONFECTIONS

NET WT. 16 OZ. (1 LB.) 453 GRAMS





# Negative contagion as a function of source (0-100 scale) difference new vs “used/laundered

<b>Factor</b>	<b>Sweater</b>	<b>Automobile</b>	
Man	-20	-10	
Accident	-33	-28	

N=453-507 students; Rozin, Markwith, McCauley, 1994



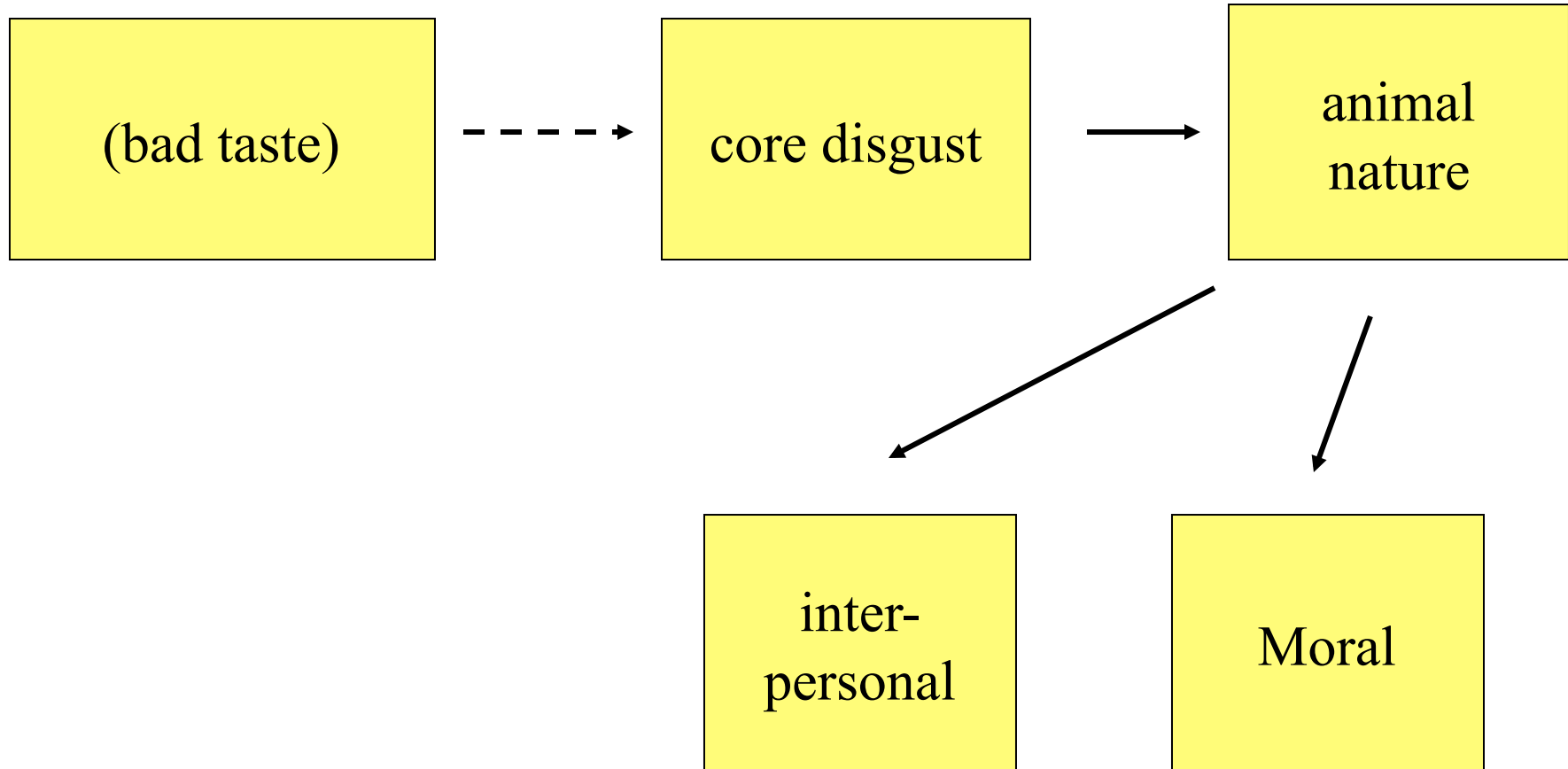
GOLDWATER  
ARCH

FOOD  
CAFE

CAFE



# Preadaptation and Disgust



# Negative contagion as a function of source (0-100 scale) difference new vs “used/laundered

<b>Factor</b>	<b>Sweater</b>	<b>Automobile</b>	
Man	-20	-10	
Accident	-33	-28	
Murder	-57	-48	
AIDS	-60	-52	
tuberculosis	-61	-44	

N=453-507 students: Rozin, Markwith, Mccauley, 1995

# Shweder's moral codes

Shweder, Much, Mahapatra & Park, 1997

<b>Rhetoric</b>	<b>Focal concepts</b>
Autonomy	Harm/rights/justice
Community	Duty/hierarchy/ interdependence
Divinity	Sacred order/ natural order/ purity

# Moral codes and emotions

Shweder, Much, Mahapatra & Park, 1997

Rozin, Lowery, Imada & Haidt, 1999

<b>Rhetoric</b>	<b>Focal concepts</b>	<b>Emotion</b>
Autonomy	Harm/rights/ justice	Anger
Community	Duty/hierarchy/ independence	Contempt
Divinity	Sacred order, natural order/ purity	Disgust









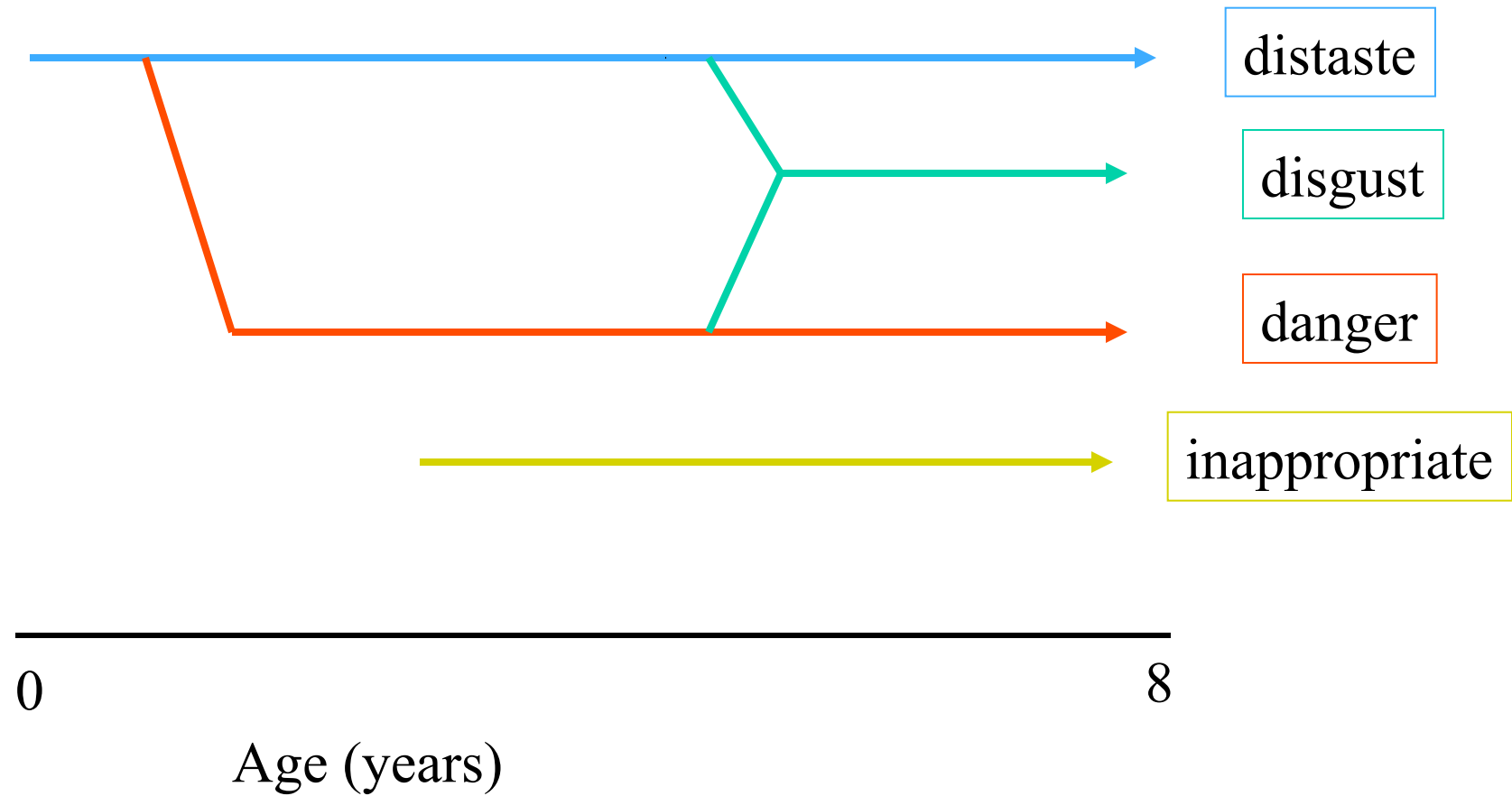
# Anatomy of disgust

William I. Miller

# Development of Disgust

- Feces as attractive to infants
- Feces as universal disgust
- Toilet training as first disgust experience
- Facial and bodily communication
- Generalization from feces to other body substances, spoilage odor, items visually similar

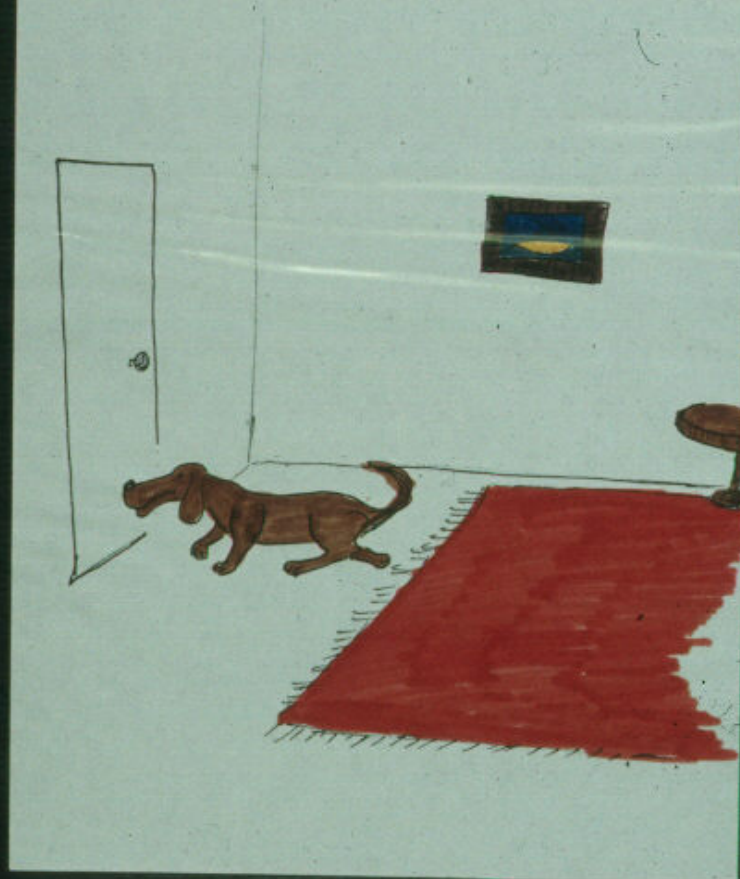
# Development of food categories



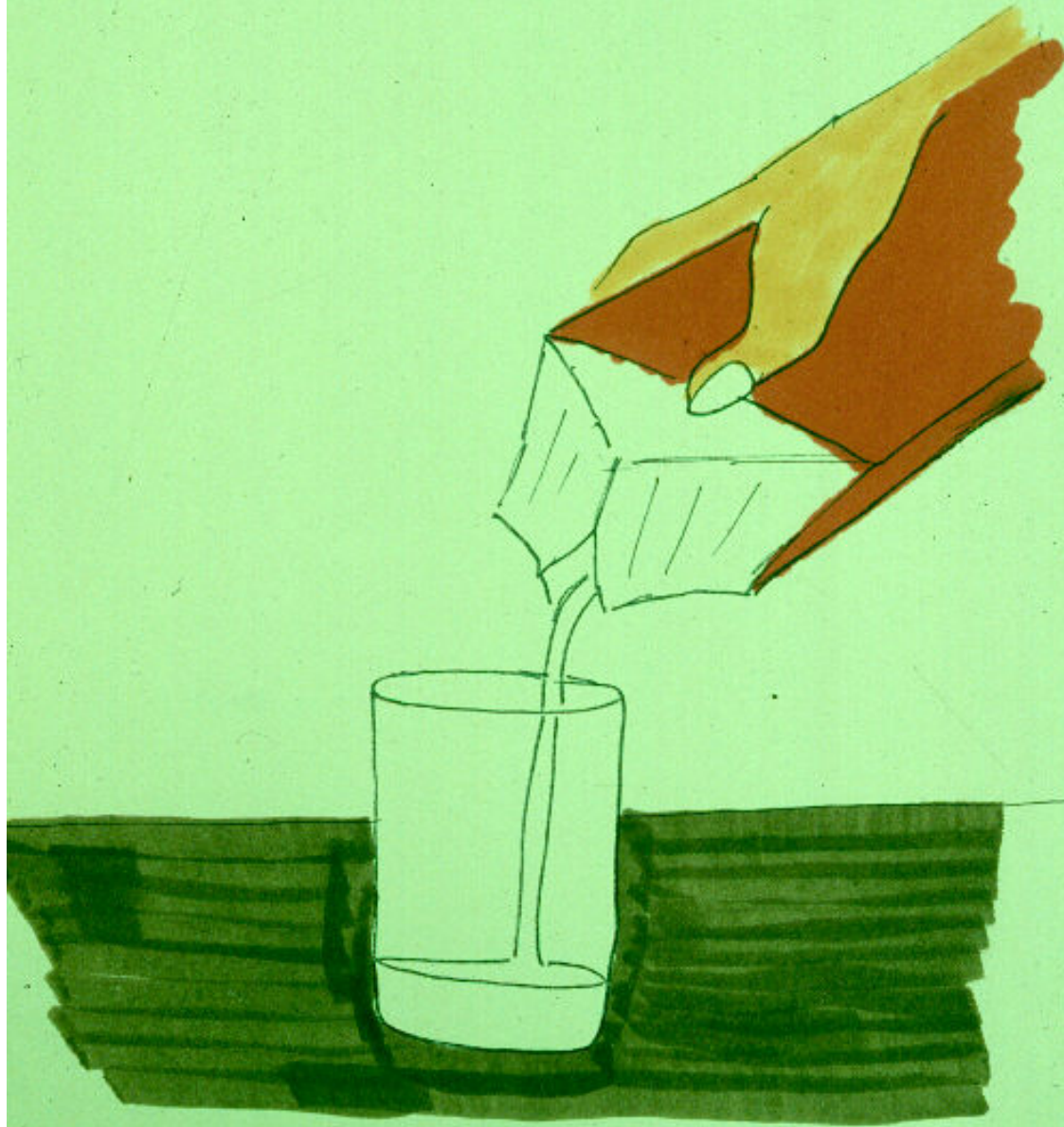
(4) This is Muffins, her dog.



(5) Muffins wants to go outside too.



She pours the milk.

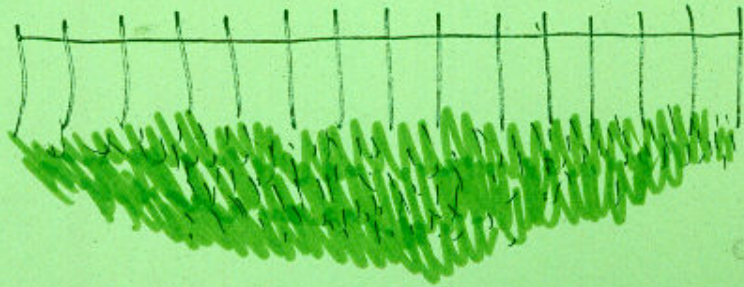
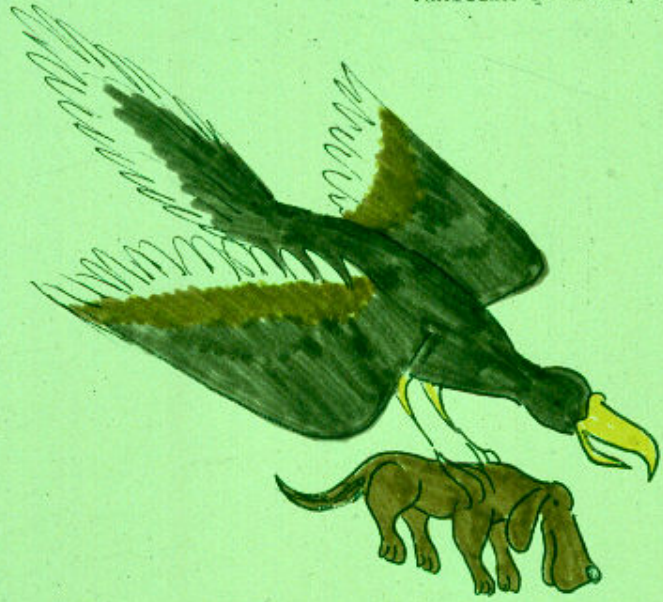


(9) Just then a giant bird comes along

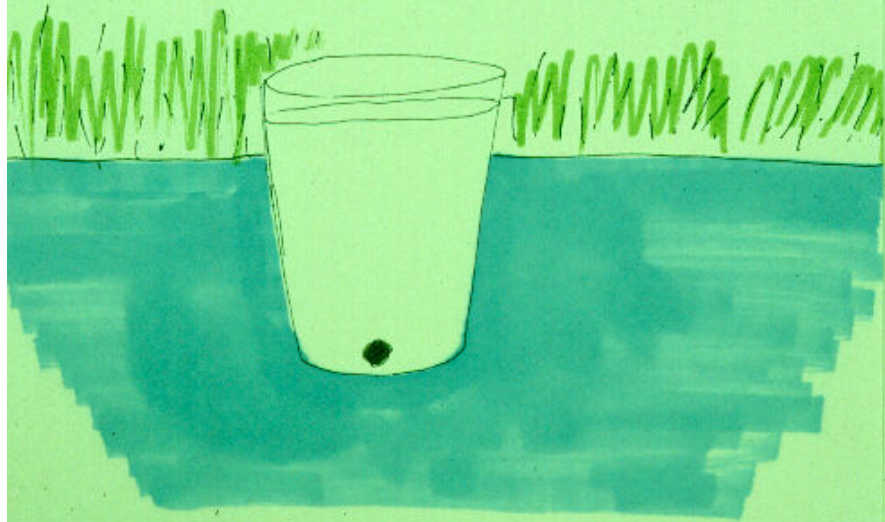




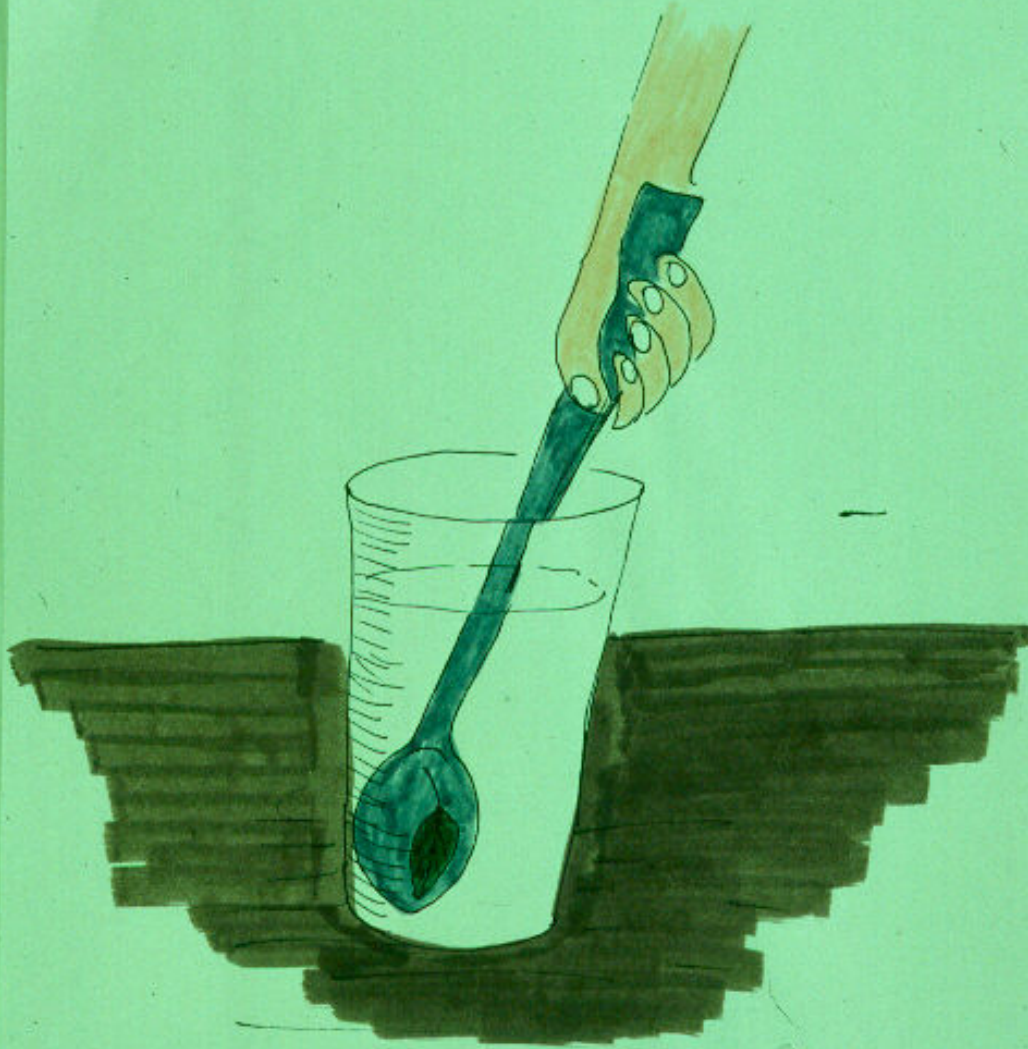
(01) and picks up Mullins.



(14) and falls to the bottom.  
How much would you like to drink the milk?



(8) The mother takes the leaf out.



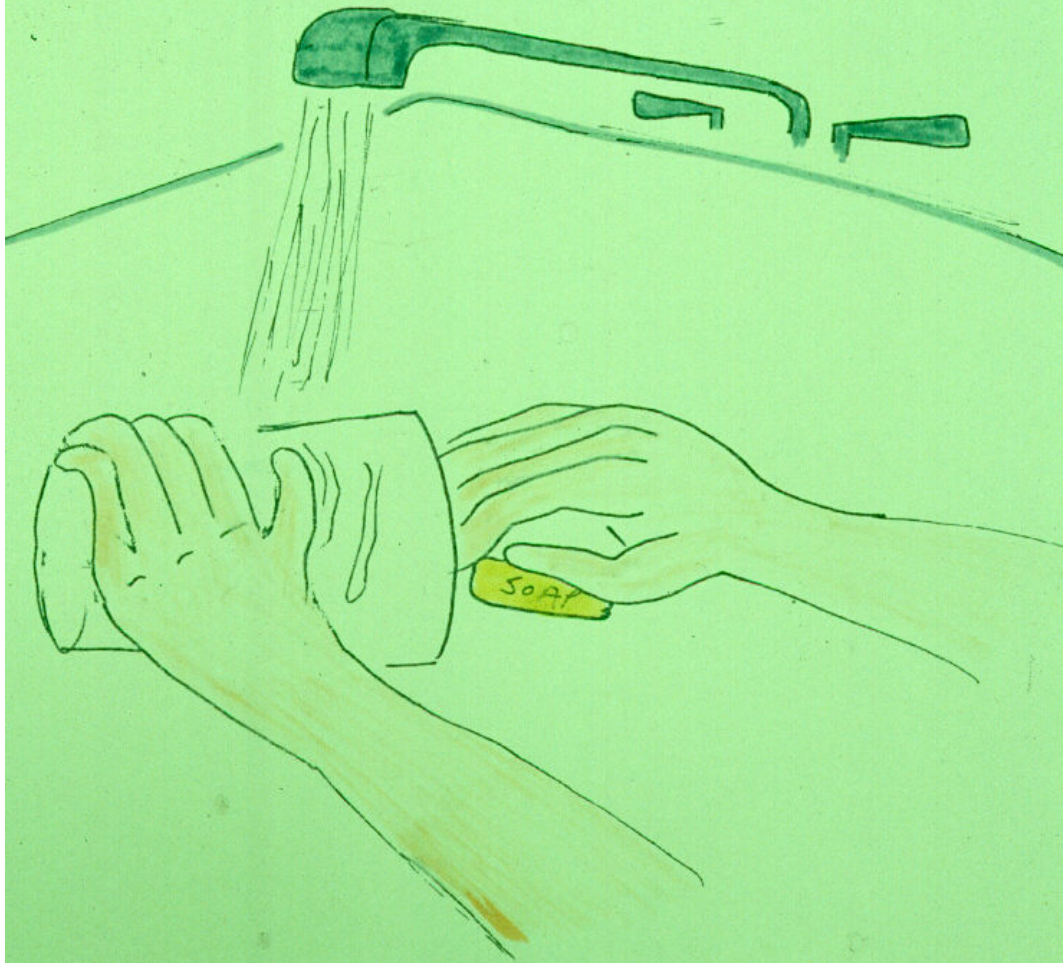
The mother spills the milk.

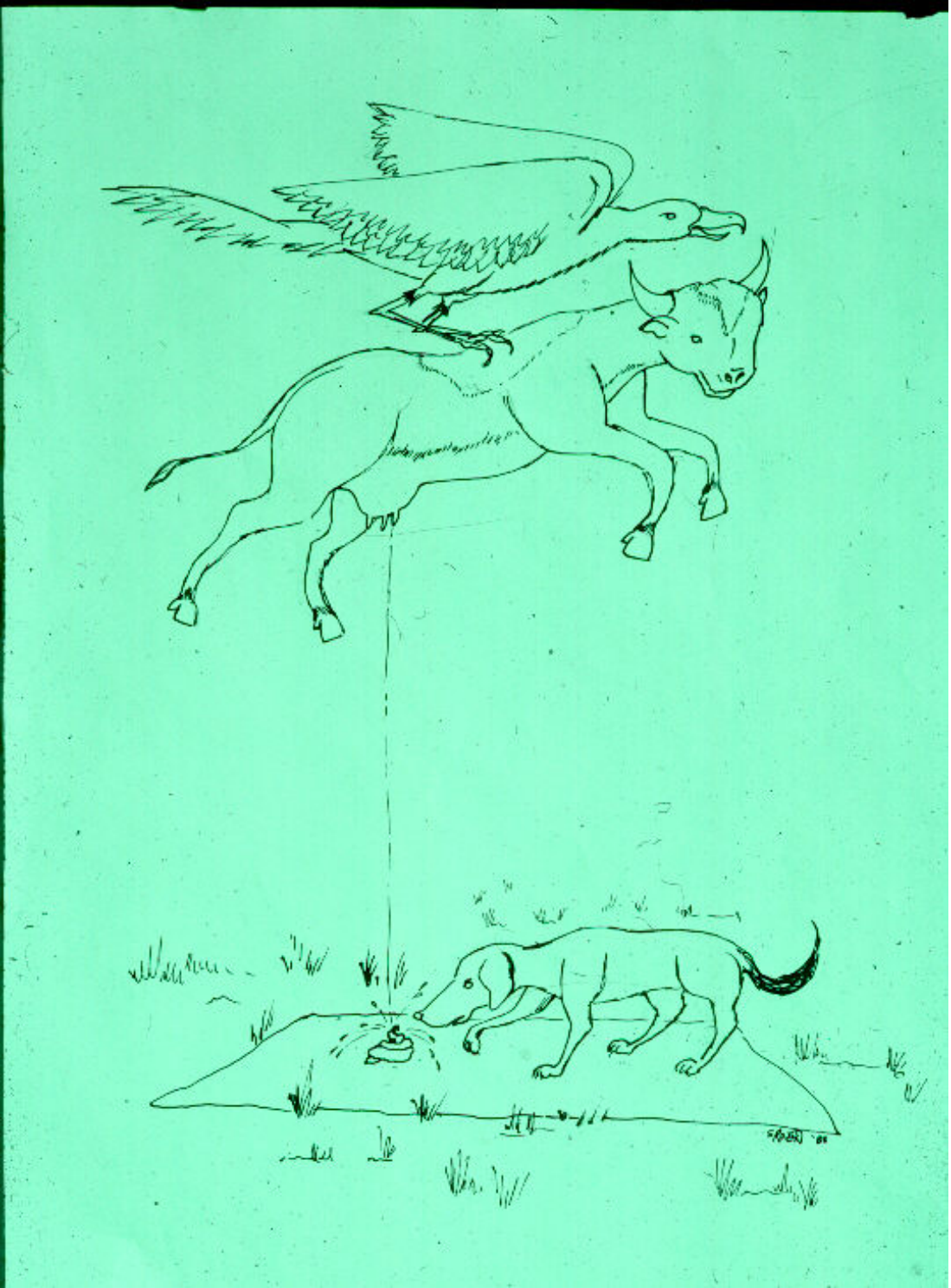


How much would you like to drink the milk?



The mother washes the glass with soap and water three times.

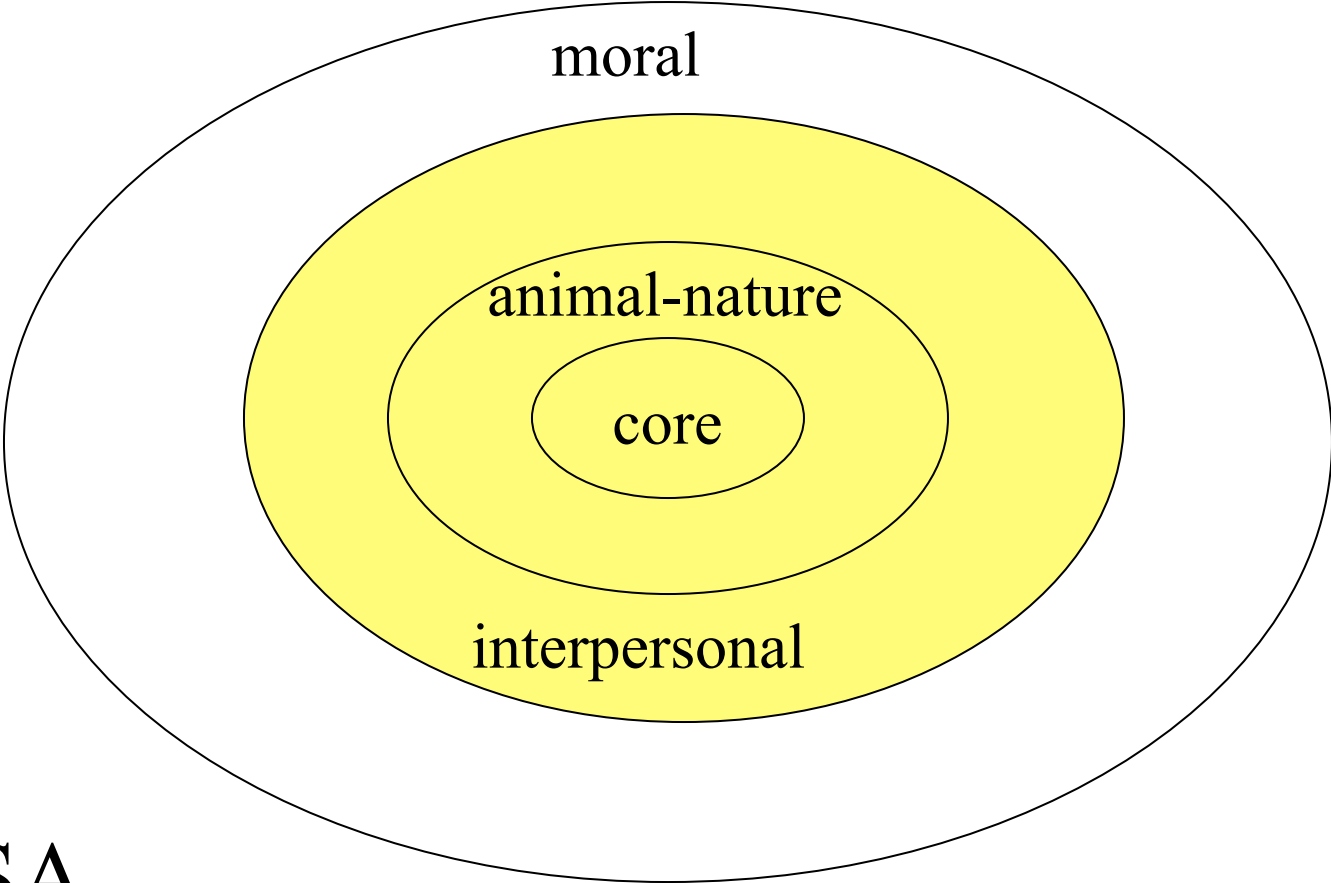




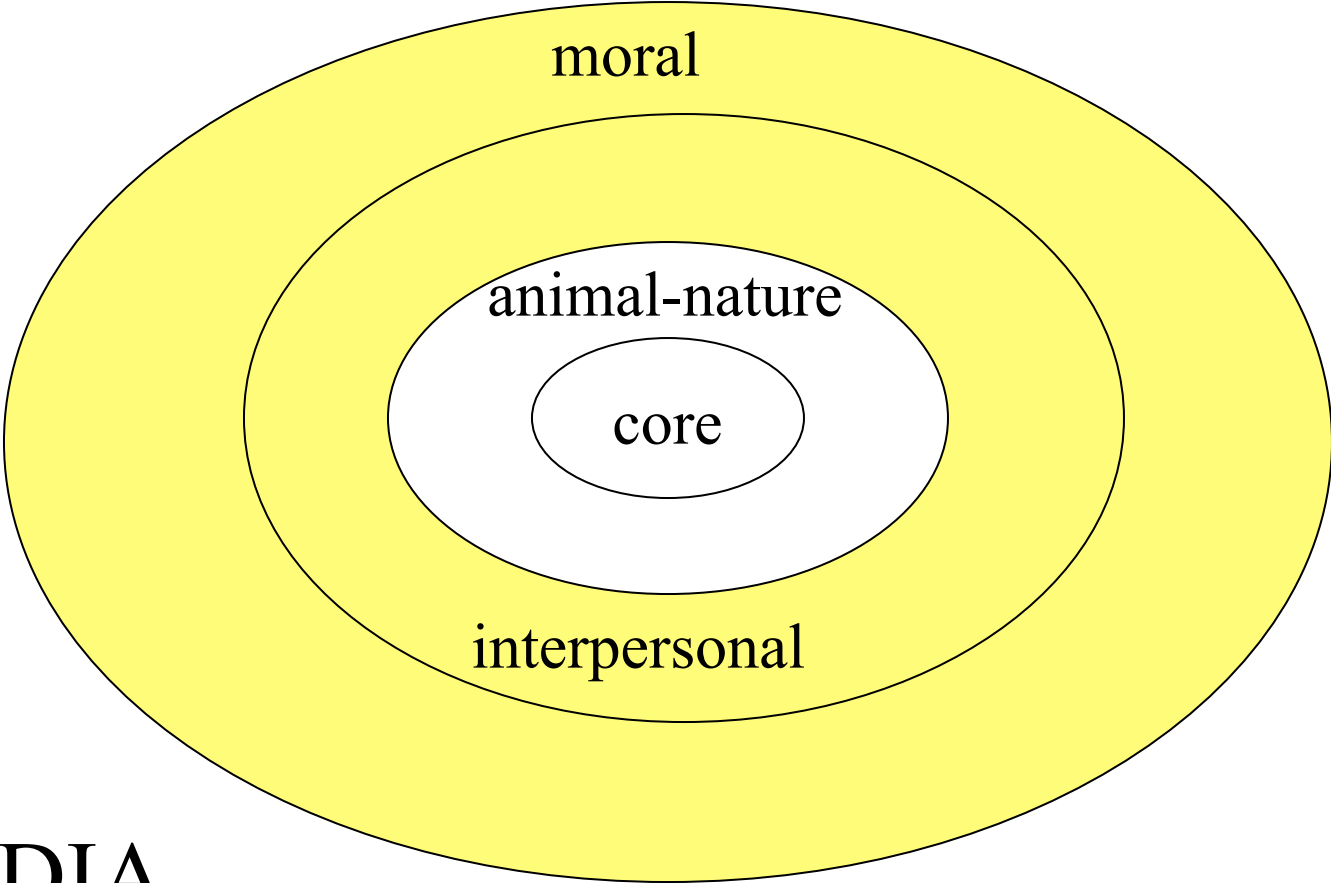
# Cultural evolution of disgust

- Protection of the body to protection of the soul
- The civilizing emotion
- Eating face-to-face



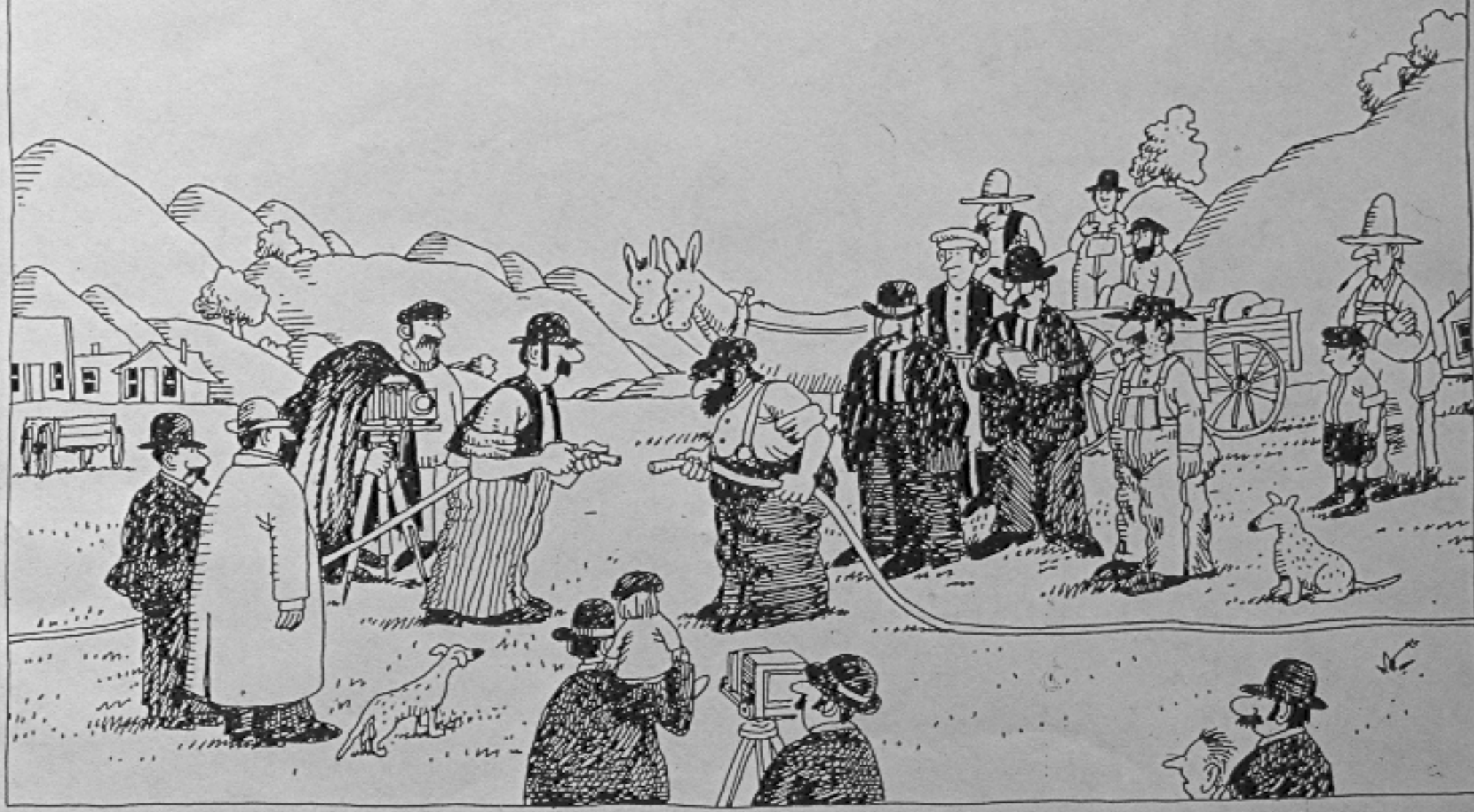


USA



INDIA

Disgust as positive and funny

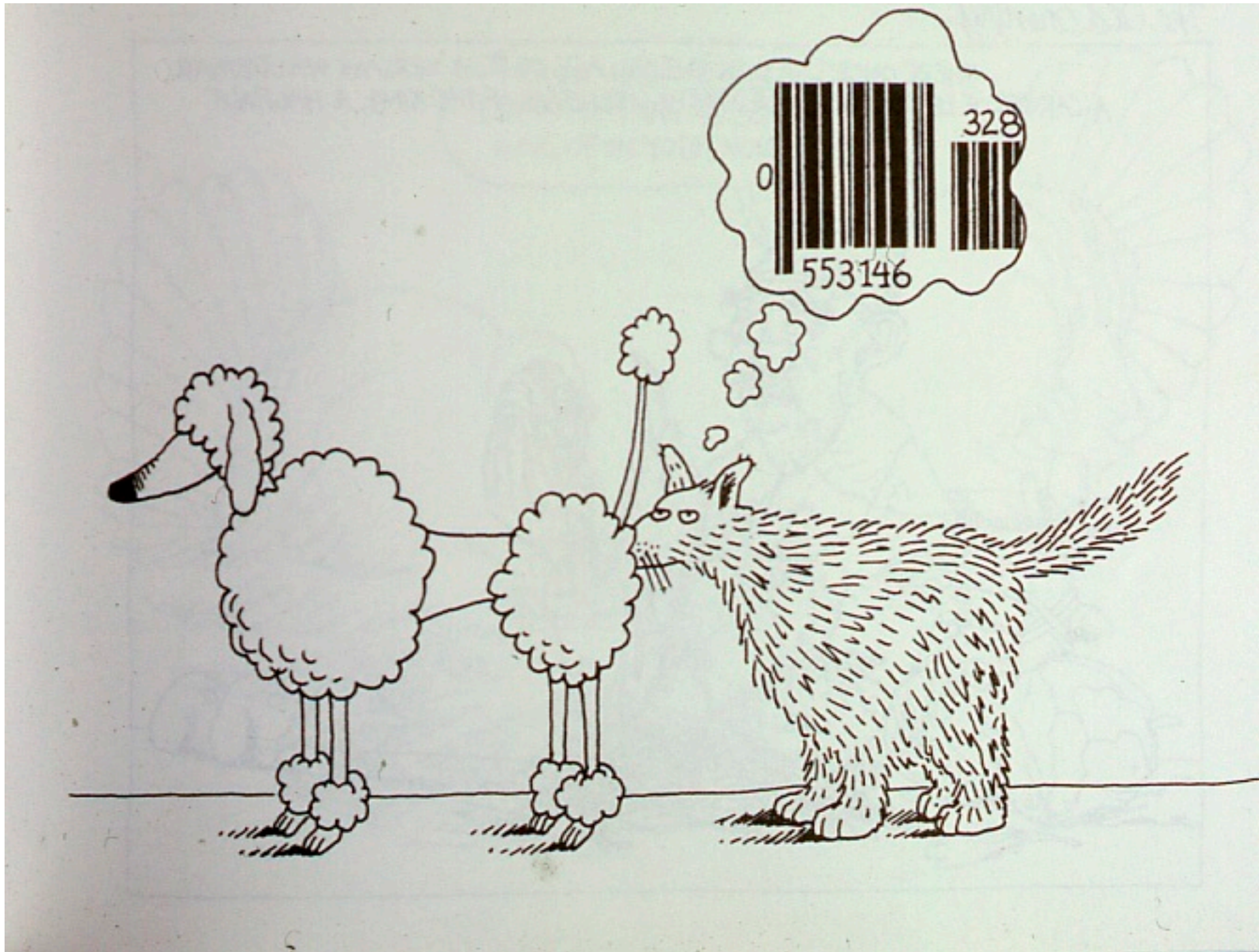






Tim Peckham

Tim Peckham









# Benign Masochism:

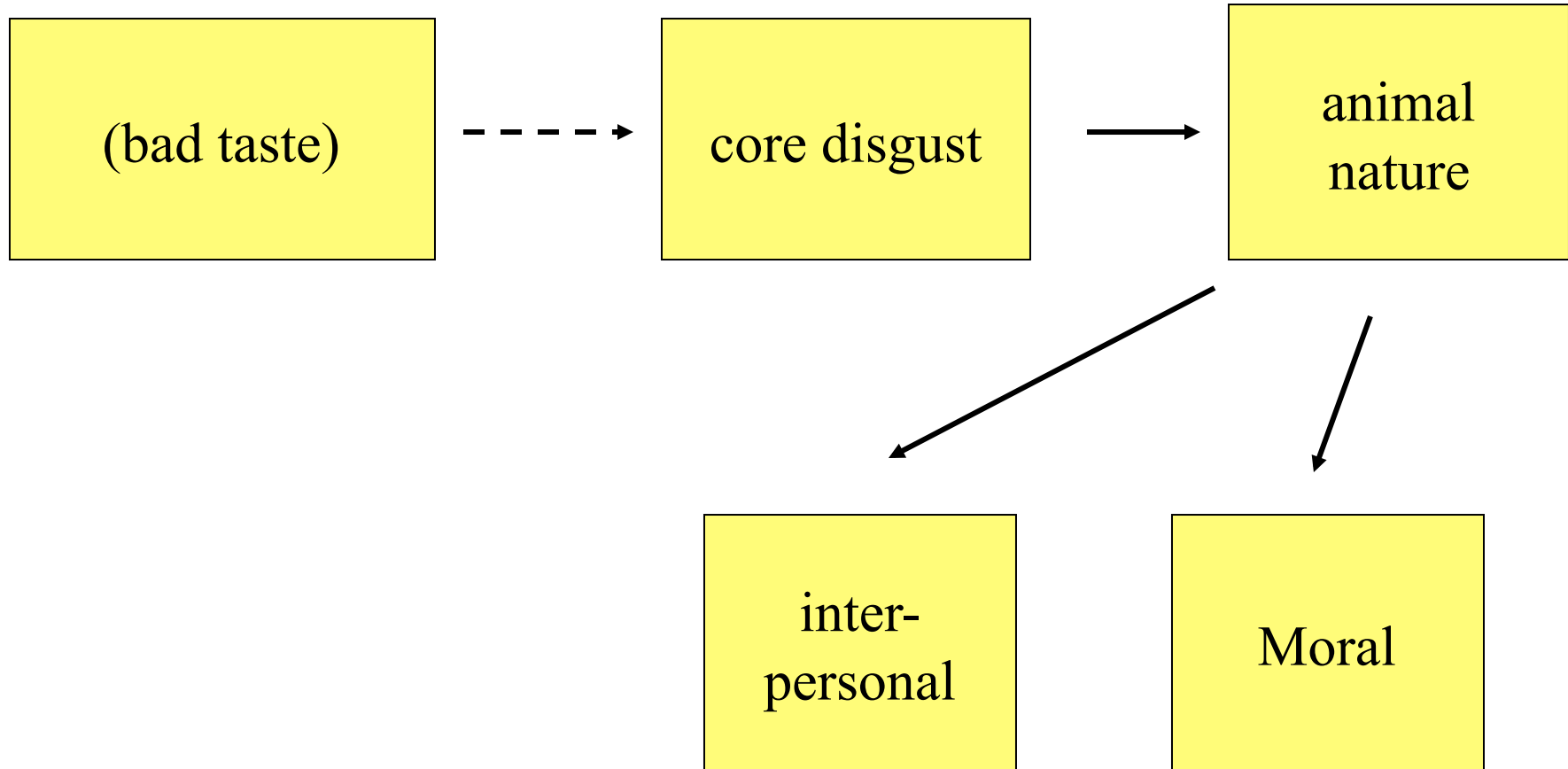
## Sex difference in factors (0-100 scale)

<b>Factor</b>	<b>Female Mn</b>	<b>Male Mn</b>	<b>Sig diff</b>
Burn	42.9	49.2	*
Bitter	19.6	22.7	
Sad	50.7	32.3	***
<b>Disgust</b>	<b>24.2</b>	<b>28.3</b>	*
Fear	43.5	45.5	
Exhaust	63.0	59.1	
Pain	13.7	16.5	

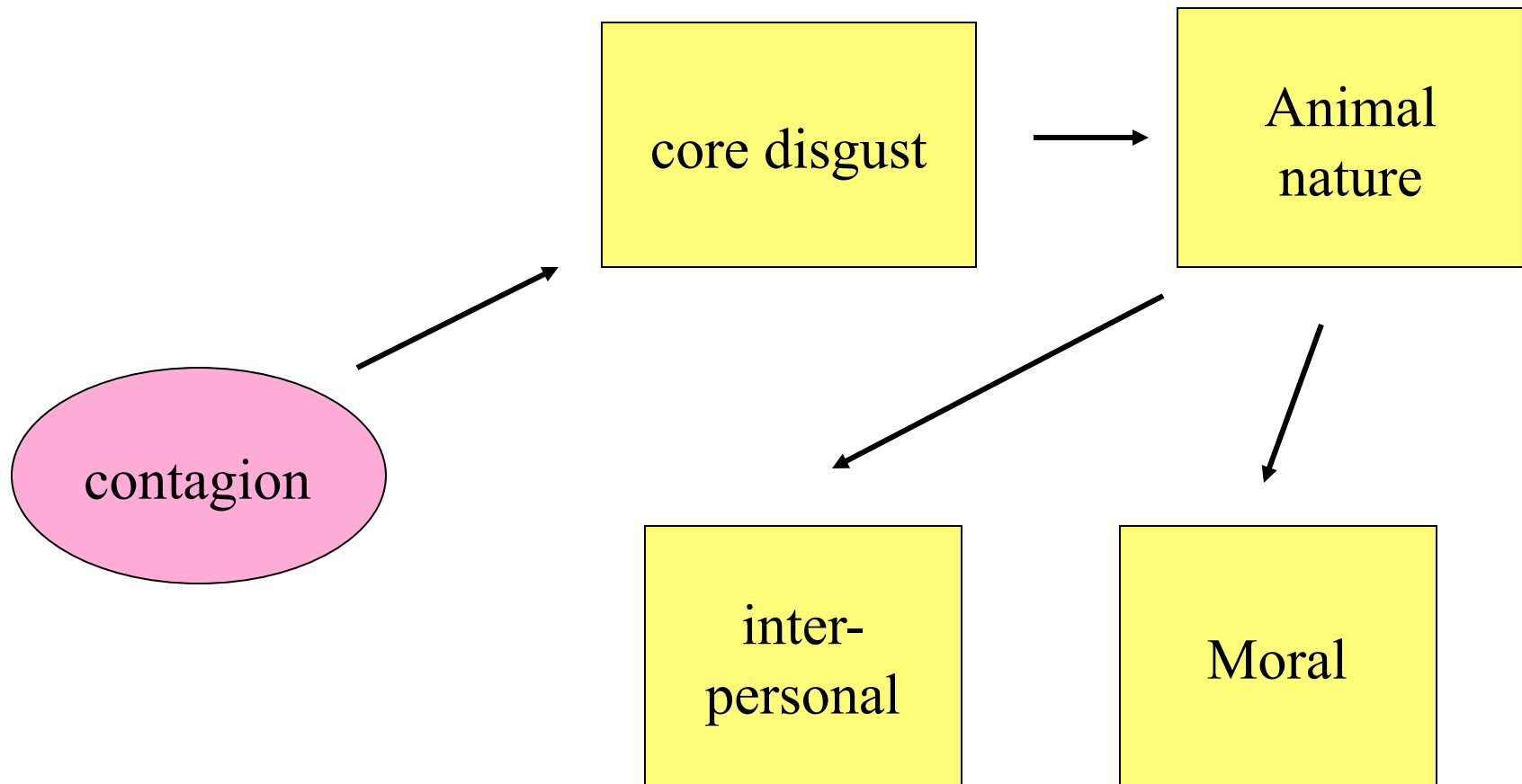
# Benign Masochism Scale

- Disgust Factor
- Enjoy disgust humor
- Enjoy disgust exhibits
- Enjoy pinching pimples
- Enjoy picking nose
- (related: enjoy stinky cheese)

# Preadaptation and Disgust

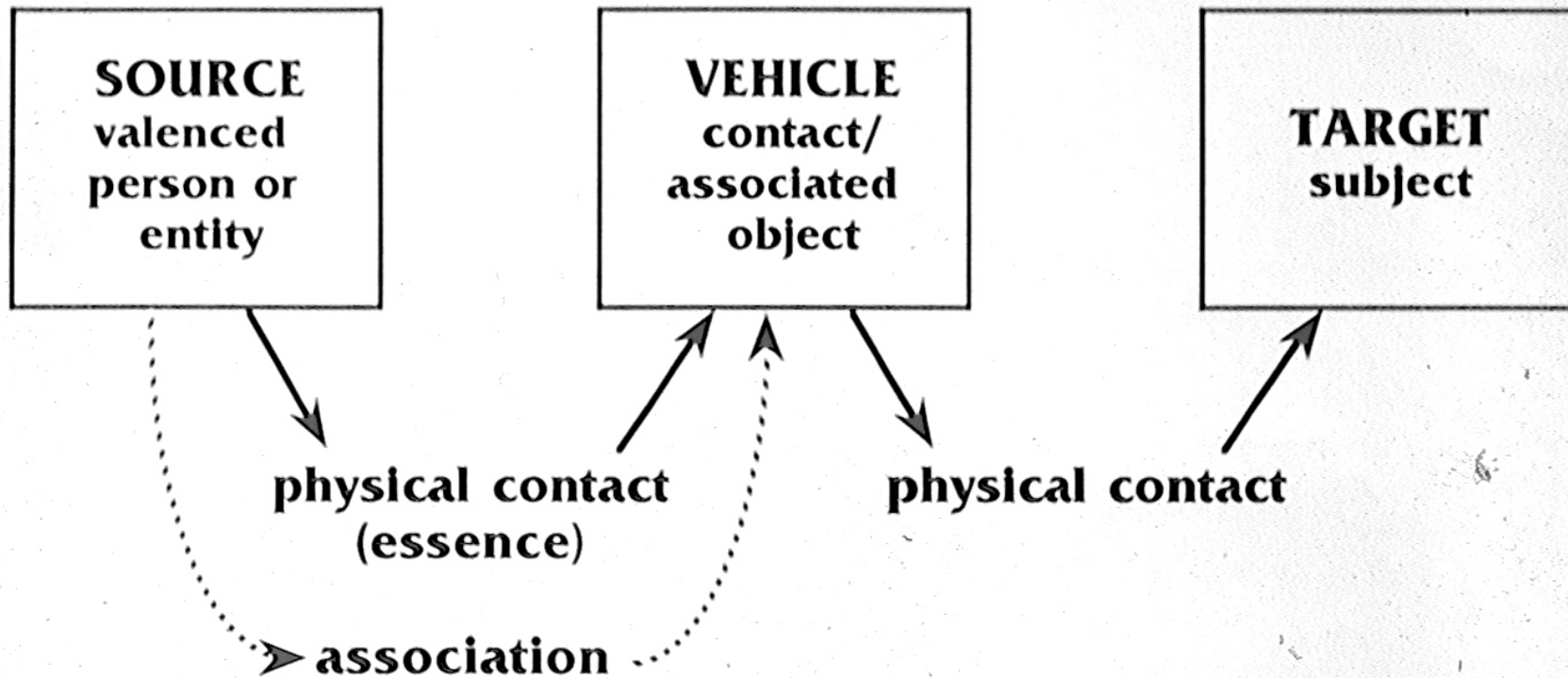


# Preadaptation and Contagion



Carol Nemeroff

# CONTAGION SCHEME AND TERMINOLOGY



# Three models of contagious essence

PURIFIER	Material	Spiritual	Association
Washing/ Sterilizing	YES		
Pulverize/ Reconstitute Exposure Positive assoc Change appearance	NO		
Contact with Positive source	YES?		



# Three models of contagious essence

PURIFIER	Material	Spiritual	Association
Washing/ Sterilizing	YES	NO	
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Contact with Positive source	YES?	YES	

# Three models of contagious essence

PURIFIER	Material	Spiritual	Association
Washing/ Sterilizing	YES	NO	NO
Pulverize/ Reconstitute Exposure Positive assoc Change appearance	NO	NO	YES
Contact with Positive source	YES?	YES	YES

# Individual differences

- Some entirely material
- Some entirely spiritual
- Most a combination of all three types, depending on source

# Development of disgust

- Development of contagion

# Disgust and psychopathology

# Disgust and phobias

- Fear and disgust as motivational base
- (Davey, Teachman)
- Lions, spiders/snakes, cockroaches

# Disgust and Obsessive compulsive disorder (OCD)

- Contamination sensitivity disgust
- Higher disgust sensitivity in OCD patients

# Other possibilities

- Psychopathy?



# Disgust and the brain

- Activation of insula, cingulate and other areas
- Link to olfactory input
- Sprengelmeyer: Deficit in disgust recognition in Huntington's disease

# **The elaboration of Moral Disgust**

# Moral-related emotions

- Other relevant
  - Anger, contempt, disgustJoy
- Self-relevant
  - Shame, embarrassment, guilt

# Disgust, Fear and Anger

<b>Emotion</b>	<b>Expression</b>	<b>Psychophysiol</b>	<b>Feeling</b>	<b>Goal</b>	<b>Action tendency</b>
Anger	Tooth bare Eyes tight	Arousal	Feel like wanting to hit	Overcome obstacle	Strike out at something
Disgust	Gape or tooth bare Eyes tight	Mild dearousal	Feel like throwing up	To avoid something	To move away from something
Fear	Mouth to side Eyes open	Arousal	Feel like wanting to hide	To avoid something	To move away from something

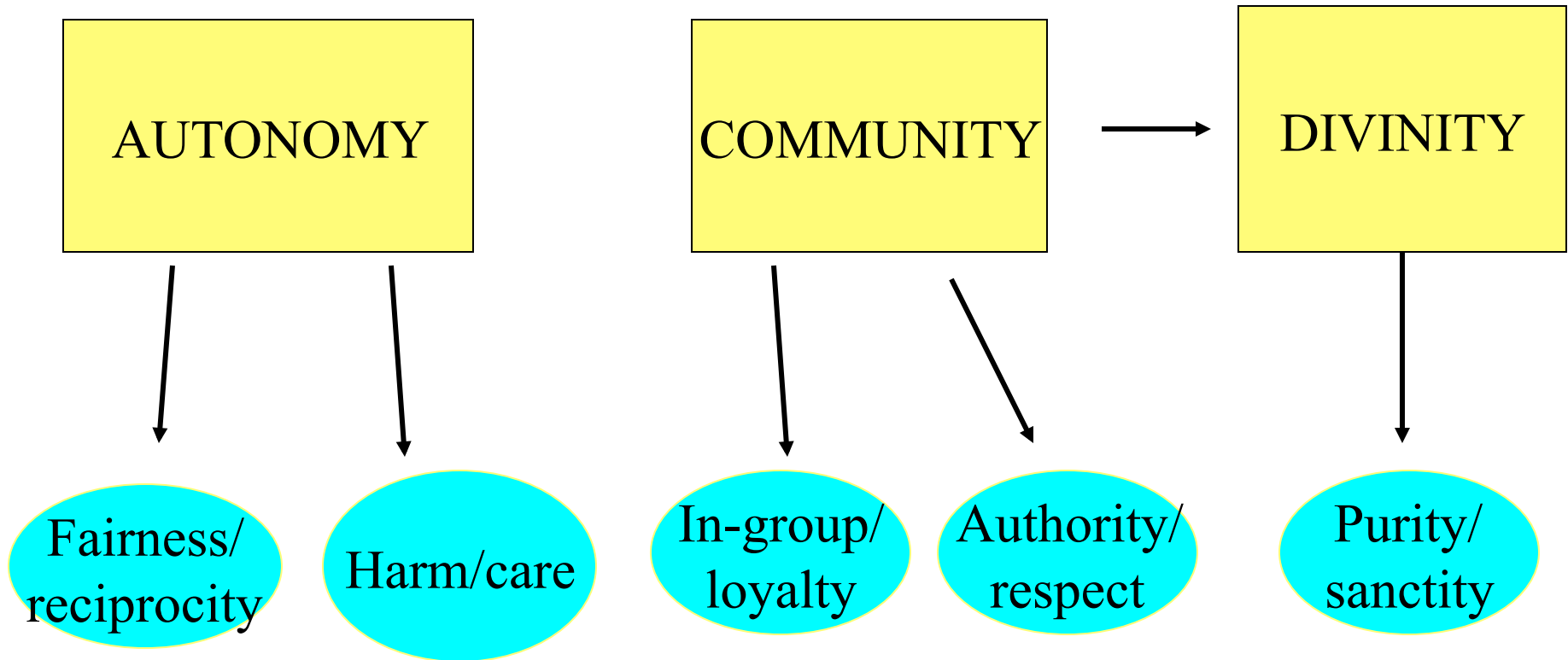
# What is Moral Disgust...

What criteria should we use to define consider moral violations “disgusting”?

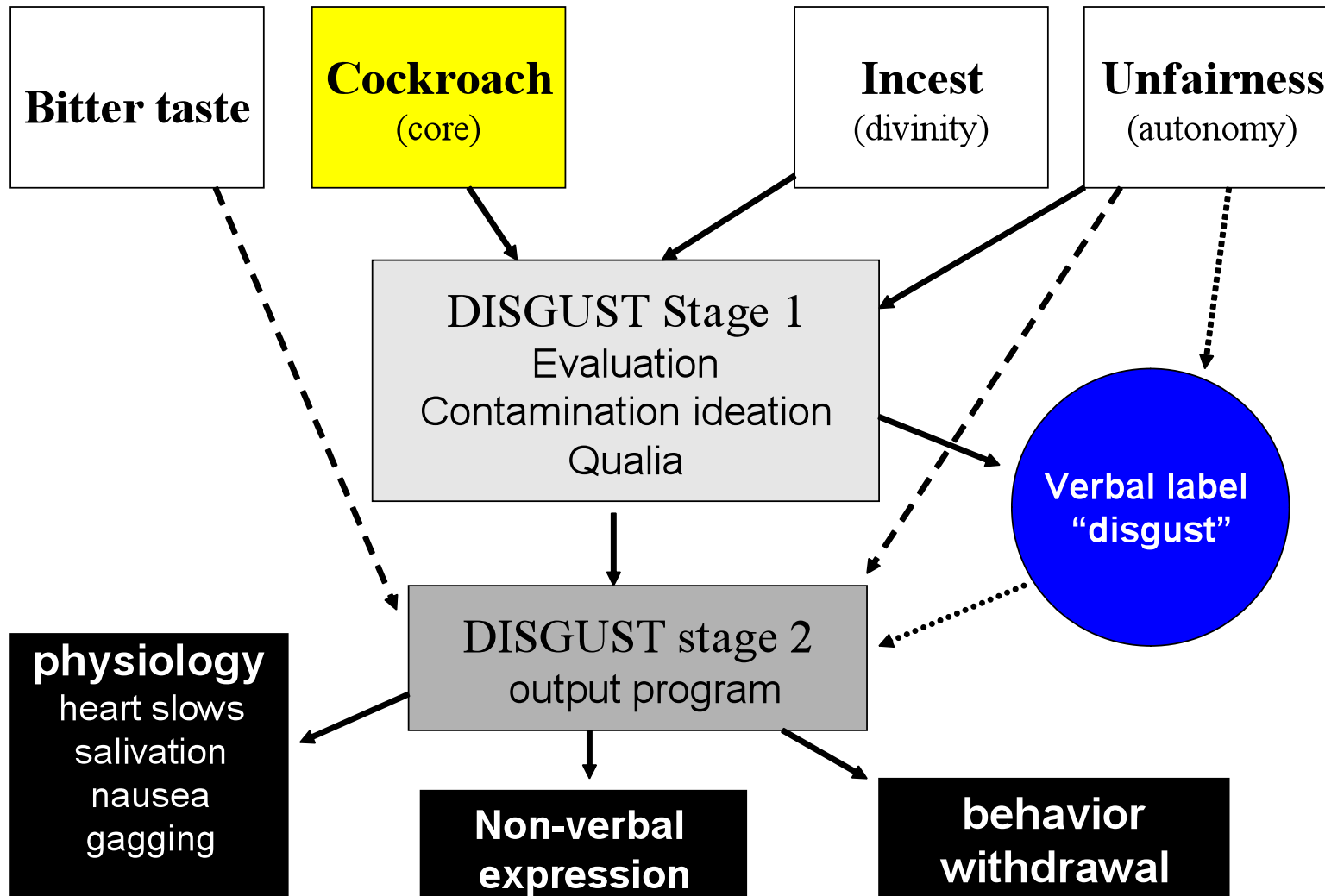
- Haidt - Moral Dumbfounding
- Royzman – Nauseous needed
- Nabi – purely metaphorical
- Facial Expressions



# Haidt's Moral Foundations

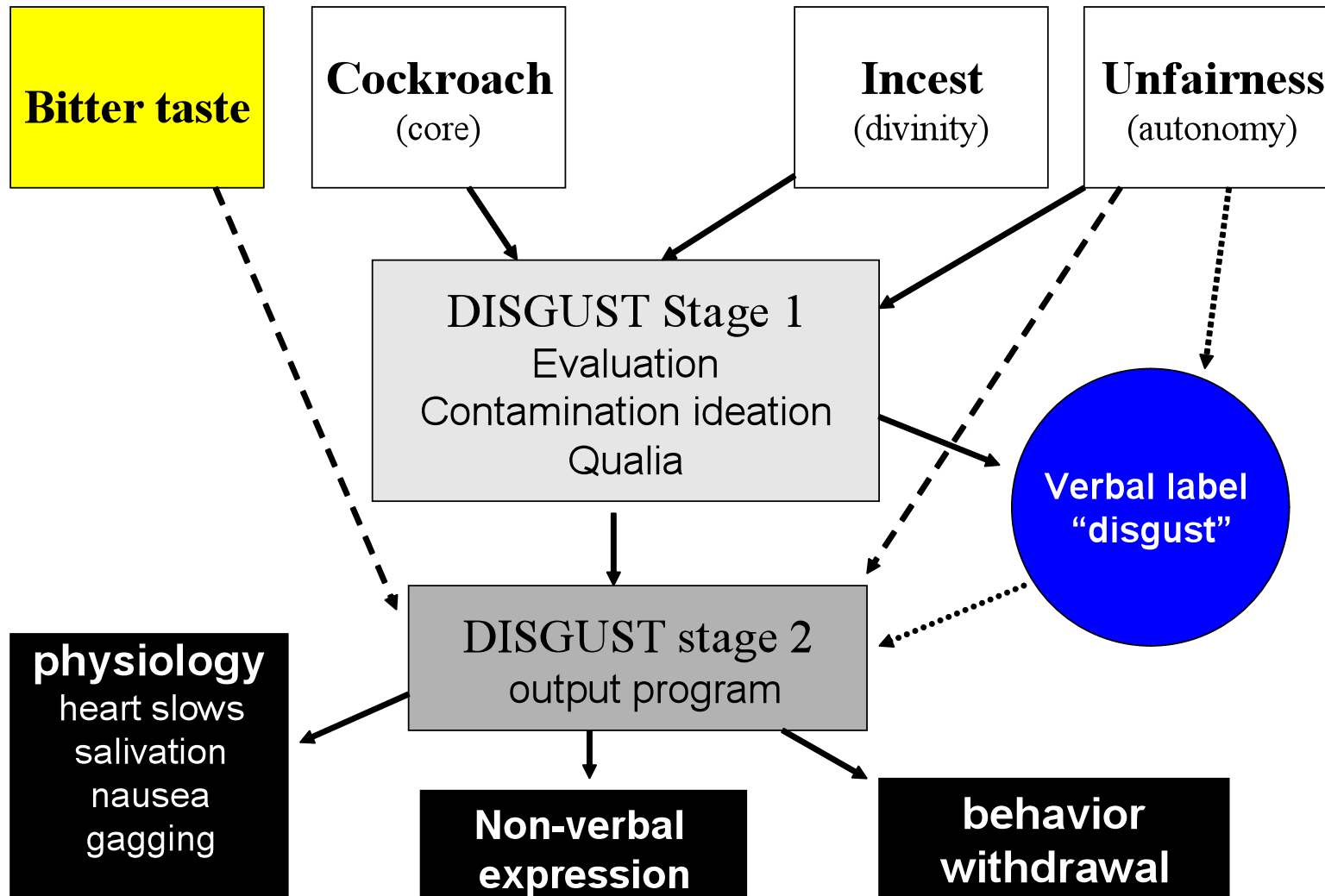


Haidt et al.

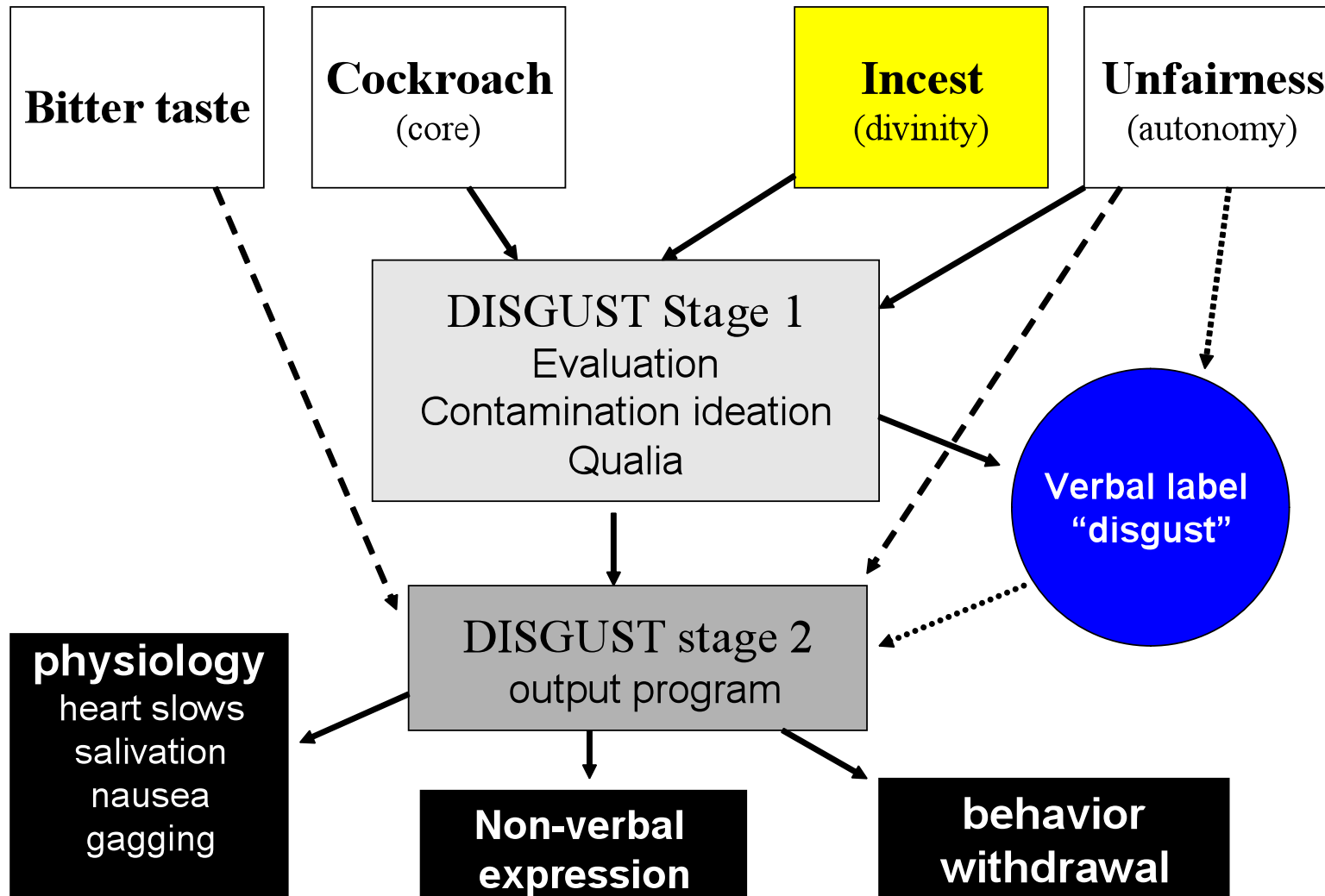


↑ **Signal: Communicating disapproval**

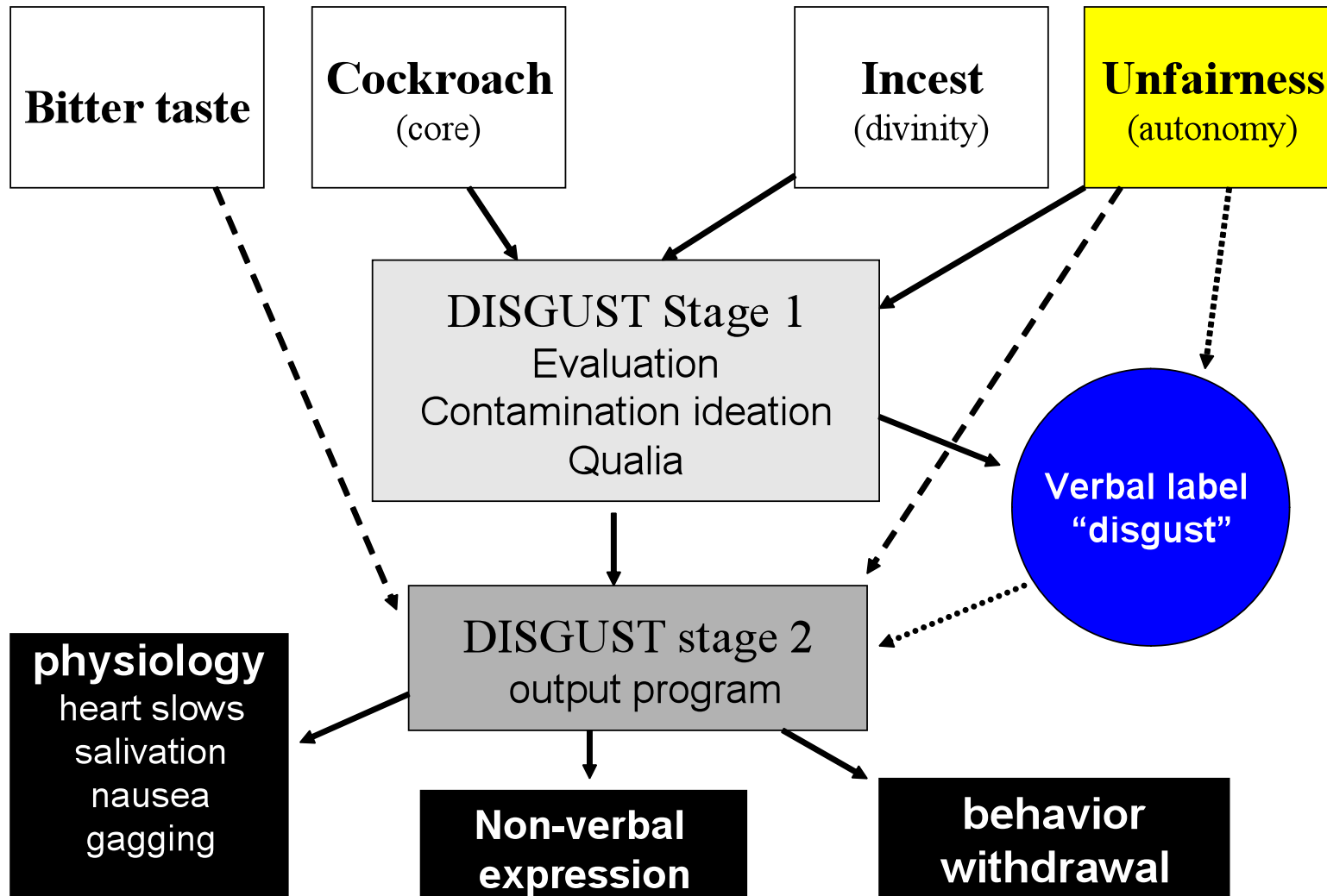




↑ **Signal: Communicating disapproval**



↑ **Signal: Communicating disapproval**

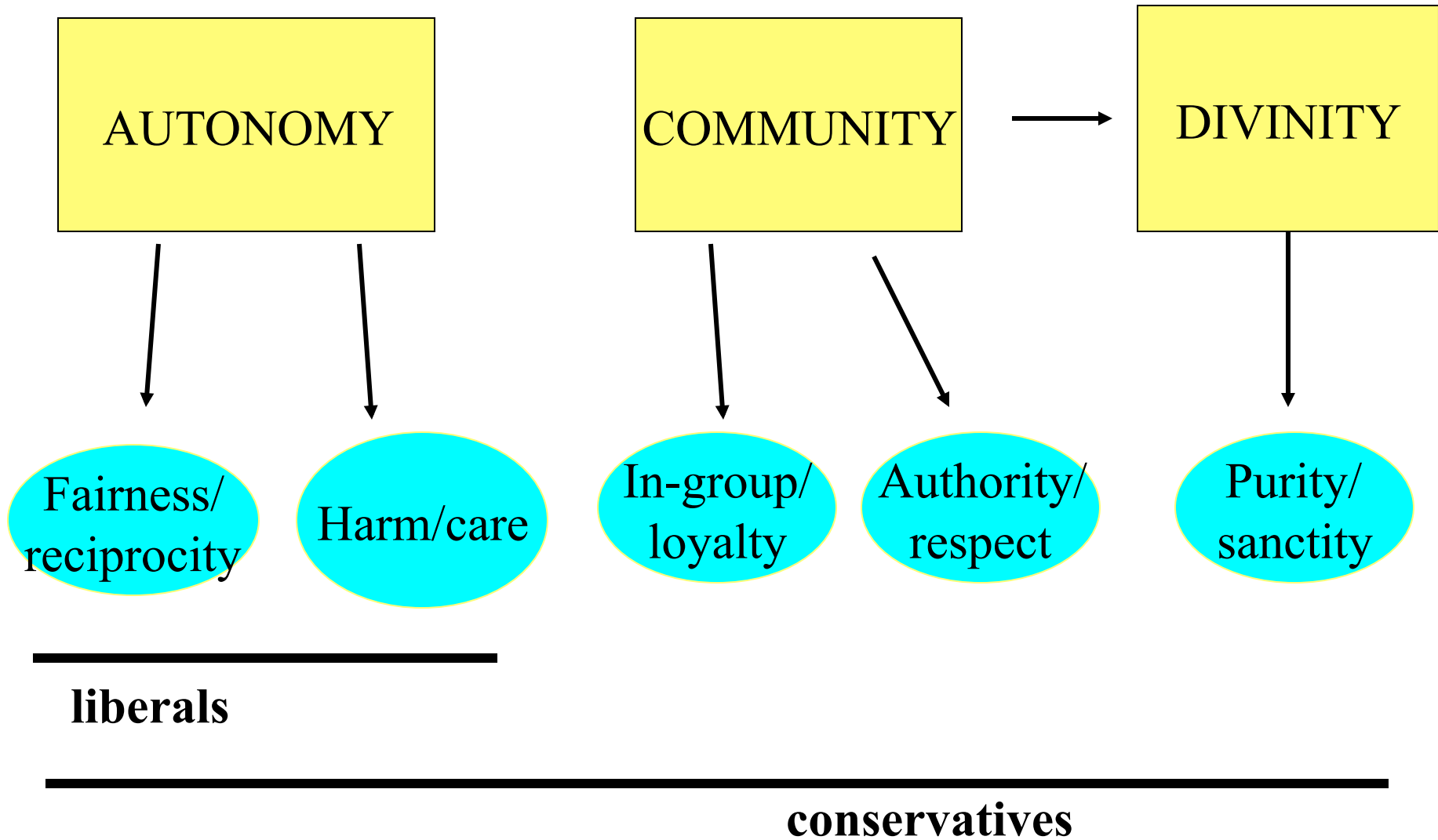


↑ **Signal: Communicating disapproval**

# Moral

1. Shoplifting a candy bar from a convenience store
4. Stealing from a neighbor
7. A student cheating to get good grades
10. Deceiving a friend
13. Forging someone's signature on a legal document
16. Cutting to the front of a line to purchase the last few tickets to a show
19. Intentionally lying during a business transaction

# Haidt's Moral Foundations

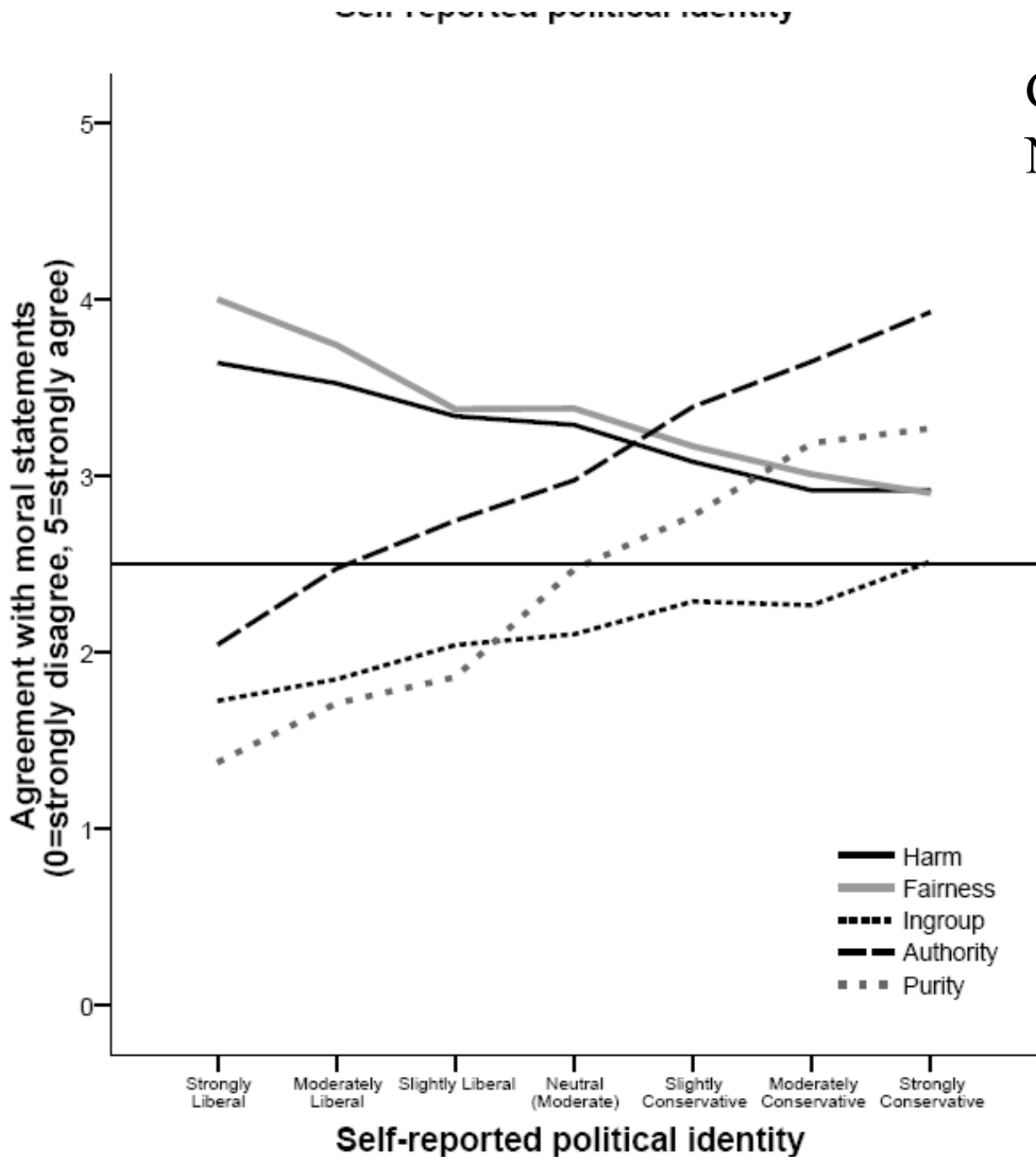


Haidt & Graham, 2009.

# Moral Foundations (evolutionary origins)

- Individualizing
  - Fairness/Reciprocity (reciprocal altruism)
  - Harm/Care (empathy)
- Binding
  - In-group loyalty (coalitional psychology)
  - Authority/respect (hierarchy)
  - Purity/sanctity (disgust, contamination sensitivity)

Graham, Haidt & Nosek, 2009



# New work on embodiment

- Preadaptation of motor and sensory system for higher functions
- Flexing and more positive feelings: extension and more negative feelings
- Zhong: Washing desire up after thinking about own moral violation or reading about one
- More likely to choose hand wipe than pencil
- Rate cleaning products (e.g. soap) more highly
- More likely to complete incomplete words with clean-related words, e.g. SO-P (soup, soap)
- More condemning of moral events after washing



# Transition

- From body to soul
- From toilet to terrorism