

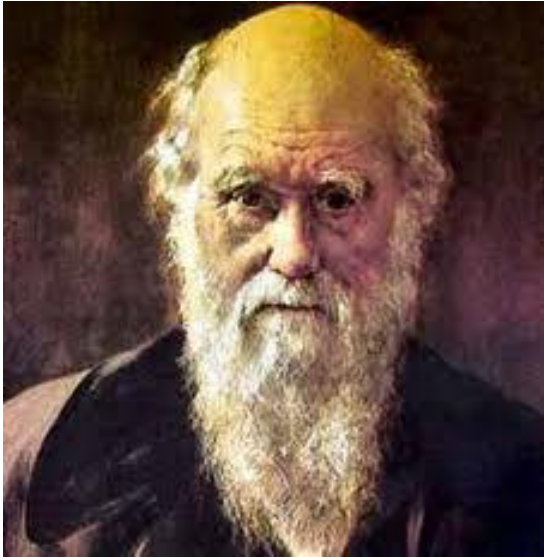
Is Darwin's Moral Sense Epigenetic?
**The Importance of Early
Experience**

Darcia Narvaez
University of Notre Dame
Indiana, USA

Outline

- What did Darwin say about the “moral sense”?
- Are the components of the moral sense diminishing?
- Why might this be?
- How does a human “moral nature” come about?
- Research studies
- Implications

The “moral sense” (Darwin, 1871, & personal notebooks)



- Arose from the sexual, parental and social instincts that evolved in mammals generally **but especially in humans**
- Gives rise to the golden rule
- Main driver of human evolution

(Loye, 2000)

- “In the first place, the social instincts lead an animal to take ***pleasure*** in the society of its fellows, to feel a certain amount of ***sympathy*** for them, and to perform various services for them....
- Secondly, as soon as the mental faculties had become highly developed, ***images of all past actions and motives*** would be incessantly passing through the brain of each individual. Out of a ***comparison of past and present***, the feeling of dissatisfaction, or even misery, which invariably results from any unsatisfied instinct, would arise.
- Third, after the power of ***language*** had been acquired, and the wishes of the community could be expressed, the ***common opinion of how each member ought to act for the public good*** would naturally become the guide to action...
- Lastly, ***habit*** in the individual could ultimately play a very important part in guiding the conduct of each member, for the social instinct together with sympathy, is, like any other instinct, greatly strengthened by habit, and so consequently would be ***obedient to the wishes and judgment of the community.***” [emphasis added]

(from Loye. 2000, pp. 128-129, quoting and slightly paraphrasing Darwin,)

Moral Sense Capacities

- Social pleasure
- Empathy
- Memory function
- Social concern
- Habit control



- Nomadic foraging peoples display these characteristics
- Lifestyle of 99% of human genus history

Moral Sense Capacities

- **Social pleasure**

- **Empathy**

- **Memory function**

- **Social concern**

- **Habit control**

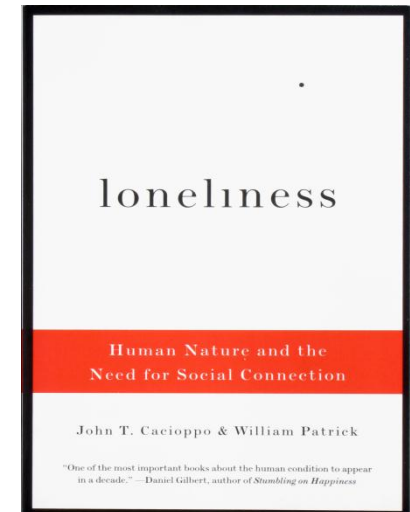
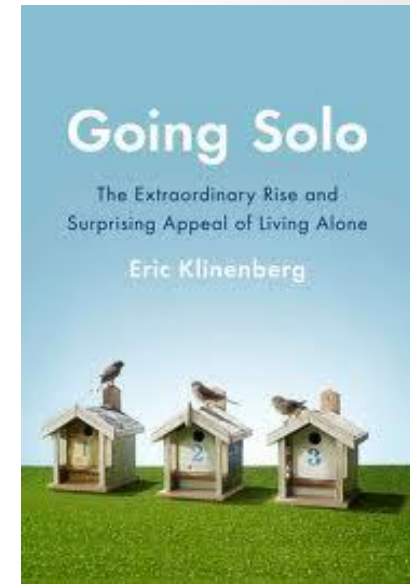
- **Single adults**

- 1950: 22%
- 2011: over 50%

- Most common household is single adult

- 28 percent of all U.S. households
(Klinenberg, 2012)

- **Isolation & loneliness are increasing**
(Cacioppo & Patrick, 2008)



Moral Sense Capacities

- Social pleasure
 - **Empathy**
 - Memory function
 - Social concern
 - Habit control
- Decrease in **EMPATHY** among college students over the last decades (*Konrath, O'Brien & Hsing, 2010*)
 - Increases in
 - **NARCISSISM** (*Twenge & Campbell, 2009*)
 - **PSYCHOPATHOLOGY** (*ACC A, 2011*)

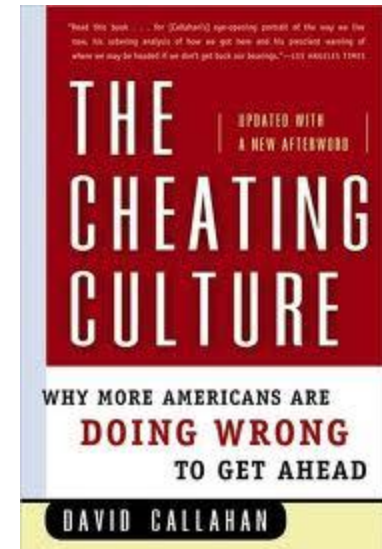
Moral Sense Capacities

- Social pleasure
- Empathy
- **Memory function**
- Social concern
- Habit control



Moral Sense Capacities

- Social pleasure
 - Empathy
 - Memory function
 - **Social concern**
 - Habit control
- Increased number of families exhibiting **anti-social behavior**
(Mooney & Young, 2006; Walker, 1993)
 - **Cheating** to get ahead is widespread in all walks of life



Moral Sense Capacities

- Social pleasure
 - Empathy
 - Memory function
 - Social concern
 - **Habit control**
- Increasing number of children who arrive in kindergarten with **behavior dysregulation** (Gilliam, 2005; Powell, Fixen & Dunlop, 2003)
 - **60-80% percent of adolescents**, and pre-adolescents engage in some form of juvenile offense (Steinberg, 2009)

Is the moral sense eroding?

- What is the biggest difference between foraging nomadic society and modern USA society?
 - **Caregiving practices in early life**
- Why might caregiving practices matter?
 - **Over human evolution, parenting intensified** as human infants became more and more helpless, and more and more needy (Trevathan, 2011)

Hominid Comparisons Dettwyler, 1997;

Montagu, 1978; Trevathan, 2011

Genus	Gestation (days)	Brain volume at full-term birth (% of adult)	Eruption of first and last permanent teeth (years)	Average length of nursing (years)	Completion of general physical growth (years)
Gorilla	252	75%	3/10.5	3-4	11
Orangutan	273	38%	3/9.8	4	11
Chimp	231	35%	2.9/10.2	4-6	11
Bonobo	240	35%	3.5/10.0	4-5	14-16
Human	280	25%	6.2/20.5	4 yrs (2-8 yrs)	20

- Developmentally born 9-18 months early
- 25% of brain volume at full-term birth (40-42 weeks) (80% by age 3)

Early body/mind co-construction by caregivers



- Human babies need “exterogestation” (Montagu, 1978)
- Constant interaction between “nature” and “nurture”
 - Epigenetic effects of early experience for all systems
 - Developmentally plastic dynamic system
- Construction of the self (social and moral) (*Schore; Stern; Trevarthen*)
- Construction of emotion systems, pleasure focus and social worldview (*Tomkins*)

Good Early Experience for Young Kids

(Slight variance from catarrhine mammalian practices over 30 million years old)

- **TOUCH:** *Held or kept near others constantly*
- **RESPONSIVITY:** *Prompt responses to fusses and cries*
- **BREASTFEEDING:** *Nursed frequently (2-3 times/hr initially) for 2-5 years*
- **ALLOPARENTS:** *Frequently cared for by individuals other than mothers (fathers and grandmothers, in particular)*
- **PLAY:** *Enjoy free play in natural world with multiage playmates*
- **SOCIAL SUPPORT:** High social embeddedness
- **NATURAL CHILDBIRTH**

Hewlett & Lamb, 2005; Konner, 2010; Narvaez, Panksepp, Schore & Gleason, in press)



Effects of expected early experience (nomadic foragers)

- **TOUCH:** Epigenetics for anxiety (Meaney)
- **RESPONSIVITY:** HPA axis (McEwan), Vagus tone (Porges)
- **BREASTFEEDING:** Intelligence, health
- **ALLOPARENTS:** Greater openness, greater maternal responsiveness (Hrdy)
- **PLAY:** More self control, social skills (e.g., Panksepp)
- **SOCIAL SUPPORT:** Greater health and wellbeing
- **NATURAL CHILDBIRTH** More success at the rest of caregiving

All are related to self-regulation

Early experience sets up structure and function of physiology



- Stress response
- Immune system
- Endocrine system
- Neurotransmitters (number, function)
- Emotions and emotion systems
- Corpus callosum
- Brain hemispheric integration

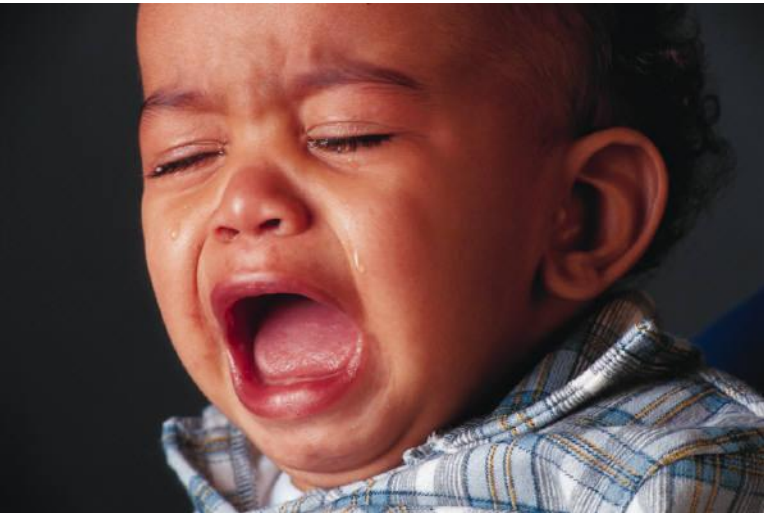
OVERREACTIVE
SUPPRESSION
MALESSION
MALFORMED
UNDERDEVELOPED
POOR
UNDERDEVELOPED

Gaps or lesions in brain systems....

Results of trauma, abuse, or neglect

And “undercare”? Narvaez (in preparation)

Inadequate early care undermines physiological and psychosocial functioning



What does it do for moral functioning?

- Deficiencies in
 - Brain structural integrity
 - Hormonal regulation
 - System integration that lead to sociality

USA has epidemics of anxiety, depression among all age groups suggesting widespread deficiencies

(Hofer, 1987; Lewis et al., 2000; USDHHS, 1999)

Triune Ethics Theory

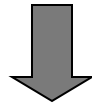
(Narvaez, 2008, 2009)

- Global brain states (MacLean, 1990) that shift motivation:
 - Self-protection
 - Relational attunement
 - Abstraction
- Capacities are influenced by early experience
- Alternative “moral natures”

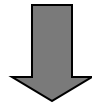


What is an ethic?

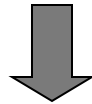
EVENT



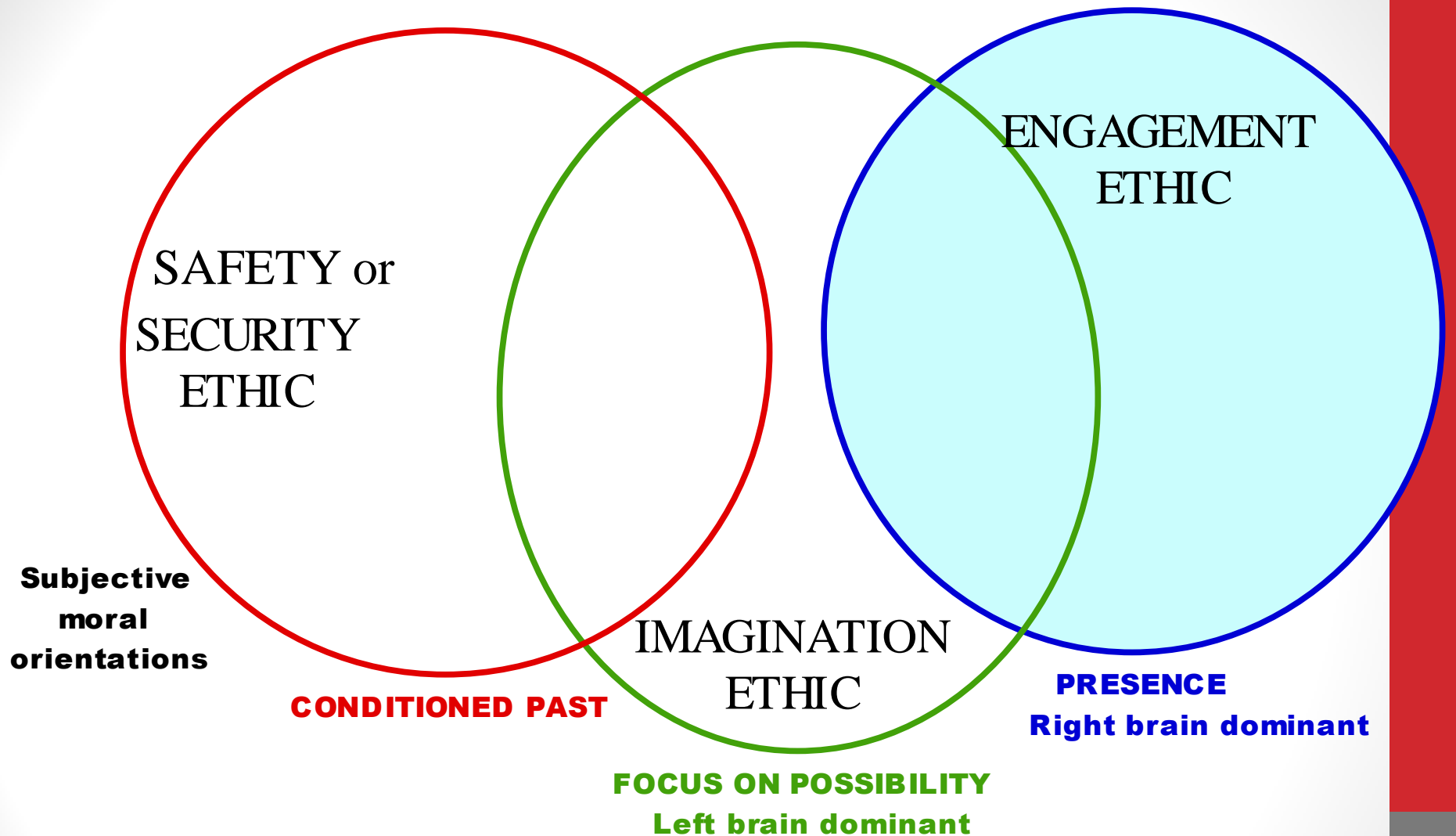
Emotion-cognitive response



Triggers behavior that trumps other values



Subjectively, it is an ethic



TRIUNE ETHICS THEORY:
the social landscape

Moral mindset

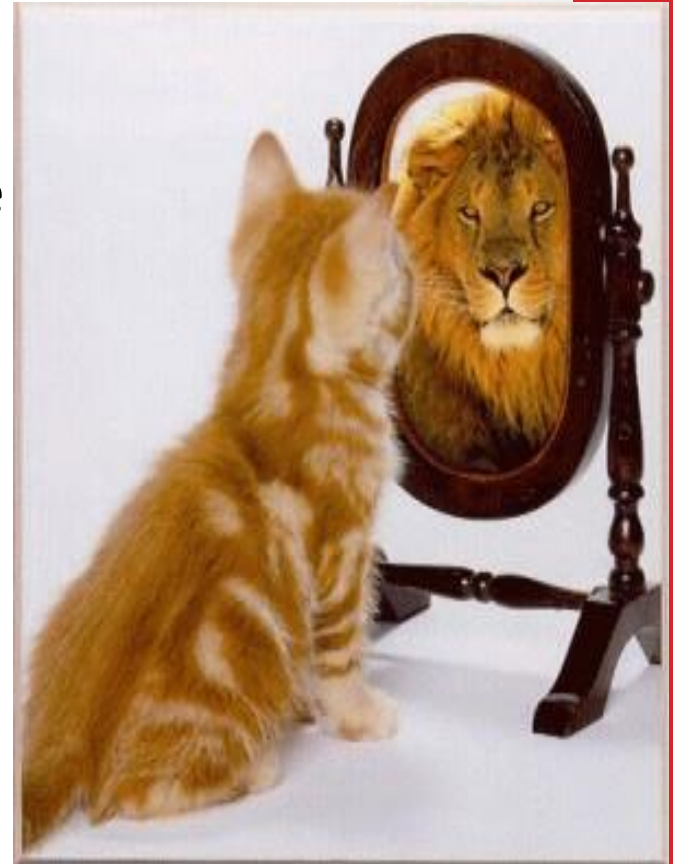
- Winner-take-all
- Brain/body resources redirected

SHIFT IN

- Information processing
- Rhetorical susceptibilities
 - “Facts”
 - Values
 - Moral judgment
 - Affordances

Examples of Situational Effects

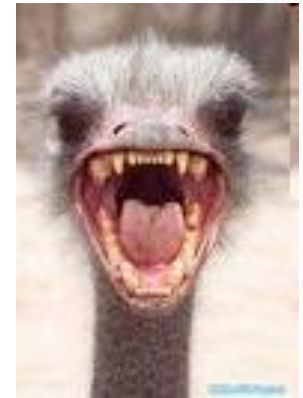
- Emotions and needs in the moment change sensory, perceptual, and cognitive processing
 - **Emotion** changes vision (Rowe, Hirsh, & Anderson, 2007; Schmitz, de Rosa, & Anderson, 2009)
 - **Physiological wellbeing** affects responses (DeWall, Pond & Bushman, 2010)
 - **Current needs** change affordances (Ariely & Loewenstein, 2005)
 - Even when thinking of others in need (van Boven & Loewenstein, 2003)



Ethic of Security: Relational Self-protection



- Based primarily in instincts for **survival** (brainstem, lower limbic system)
 - Systems shared with all animals (*Panksepp 1998*)
 - Available at birth
- Instincts primed by perception of fearful climate or situation
- Takes over attention
 - Depletes resources for higher order processes
 - Shifts attention to the self, lowering empathy
- Useful for moments of physical threat, otherwise is pathological



Security Subtype 1: *Bunker Security*



- **“Fight”**
 - Based in the activating sympathetic system
- **Defensive or reactive aggression**
 - Feels “good” and “right”
- **Self-preservational externalizing**
 - Early trauma->personality disposition
 - Ambivalent/Anxious attachment

Emotion systems: SEEKING, RAGE

Behaviors: abuse, bullying, blaming

Henry & Wang, 1998

Security Subtype 2: *Wallflower Security*

- **“Freezing” or disassociative “Flight”**
 - Based in the systems that protect body from death or psychological trauma
- **Submission, passivity, detachment**
 - Compliance with an authority
- **Self-preservational internalizing**
 - Early trauma->personality disposition
 - Anaclytic or introjective depression



Emotion systems: FEAR, SEPARATION DISTRESS

Behaviors: compulsiveness (caregiving, compliance), obsessiveness hoarding, withdrawal, paralysis

Henry & Wang, 1998

Ethic of Engagement: Relational Attunement



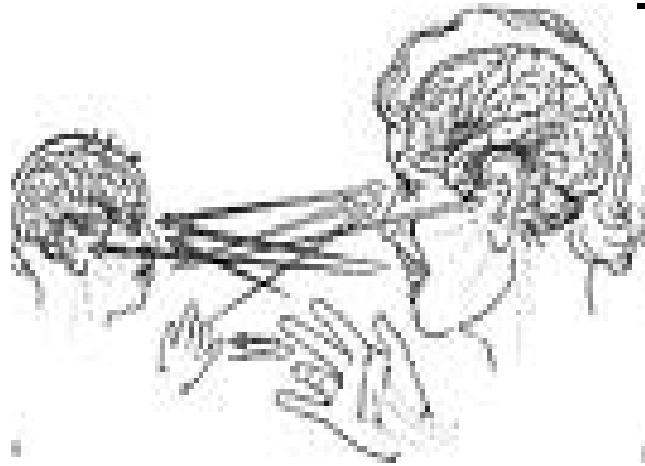
- Mammalian emotional systems drive us towards intimacy
 - Social and sexual instincts, empathy and parental care, play (*Darwin, 1872*) that underlie Darwin's "moral sense"
- Primed by supportive, caring relationships and environments
 - Secure attachment (Bowlby)
 - Intersubjectivity and companionship care (Trevarthen)
- Focused on present moment

Emotion systems: upper limbic: CARE, PLAY
Behaviors: compassionate response, egalitarian social play, acceptance, social non-self

Schore, 1994

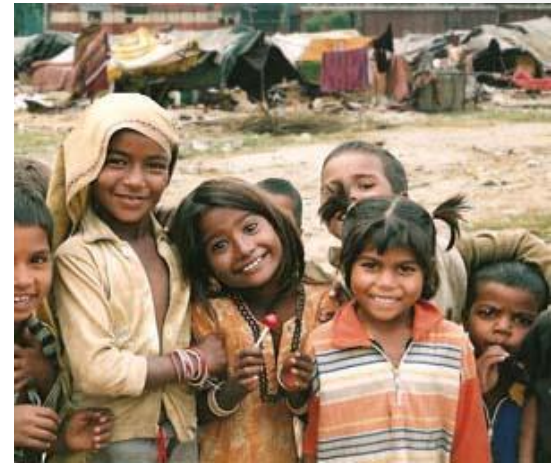
Ethic of Engagement is not innate

- Dependent on proper care during infancy and childhood
 - Epigenetic
 - Plasticity
 - Right brain
- Brain circuitries necessary for social engagement develop from experience



Engagement May Not Be Enough for Macro Morality

- Humans evolved to favor face-to-face relationships
- We have difficulty imagining those not present



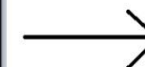
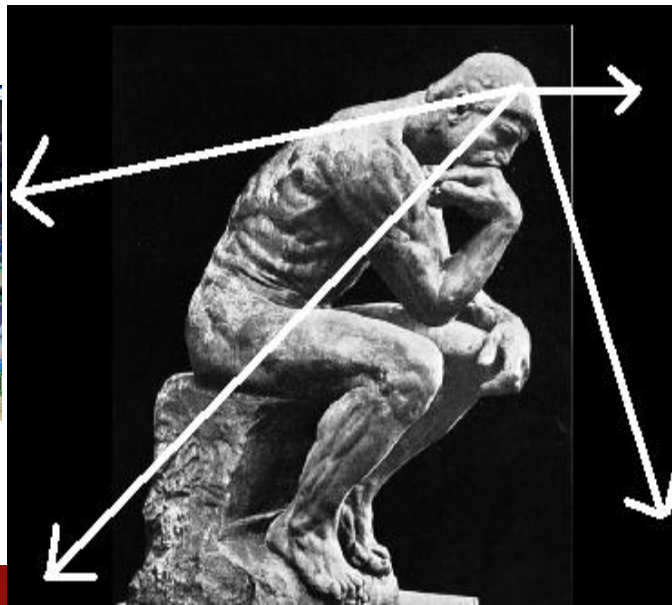
Ethic of Imagination: Reflective Abstraction

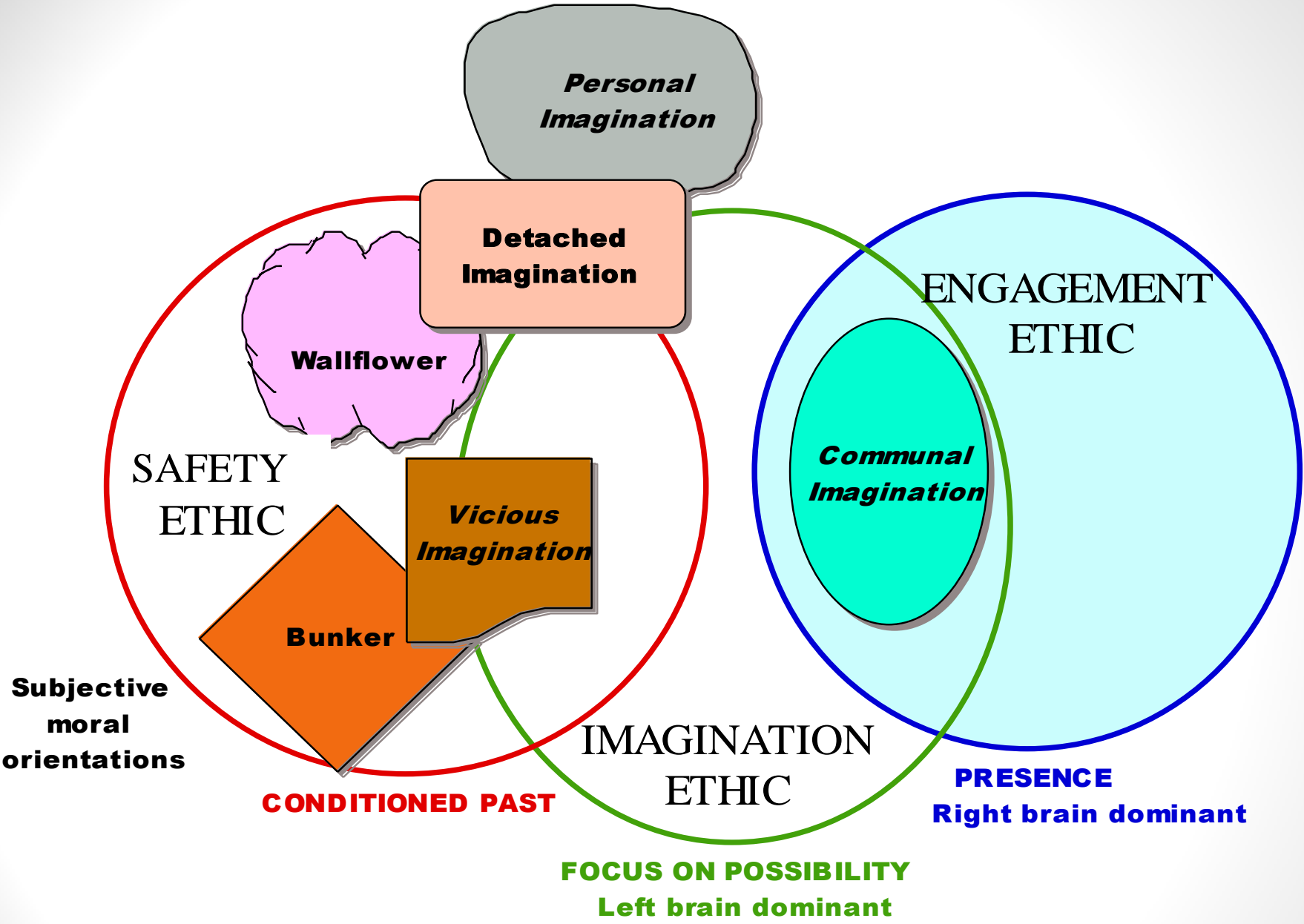


- Coordinates functioning
- Neo & Prefrontal Cortices
- Reflective behaviors:
abstraction, deliberation,
imagination
- Executive functions (plan,
stop, start, maintain,
change course)
- Empathy

Coordinates Moral Functioning

- Gut feelings, intuitions, instincts, principles
- Self goals/needs with the goals/needs of others
- Reactions and outcomes (of self and others)
- Judgments and decisions





Imagination Subtype 1: Detached Imagination

- “Left brain” dominant (*McGilchrist, 2009*)
- Emotionally cool or cold
- Categorizes and stereotypes
- Objectifies, dissects and orders
- Decontextualizes
- Seeks control, power over objects
- Seeks a firm, certain answer
- Calculates usefulness of other people and things
- Source of Flynn effect (*Flynn, 2007*)



Oppenheimer &
atomic bomb

Detached Imagination

- Lack of attuned relationship
- Innovation without a sense of consequence
- Extreme version
 - Asperger's syndrome
(Baron-Cohen)
- What is usually studied in moral psychology
- What schooling emphasizes
- What undercare in childhood encourages (avoidant attachment)



Imagination Subtype 2: Vicious Imagination

- Fueled by anger and aggression or extreme ideological striving
- Un-egalitarian (power over the Other)
 - Scapegoating
 - “Eliminationism” (Neiwert, 2010)
 - “Moral mandate” (Skitka)
 - “Pathological altruism”

(anxious attachment)



Imagination Subtype 3: Communal Imagination



Envision THE FUTURE
Talk to YOUR CHILDREN

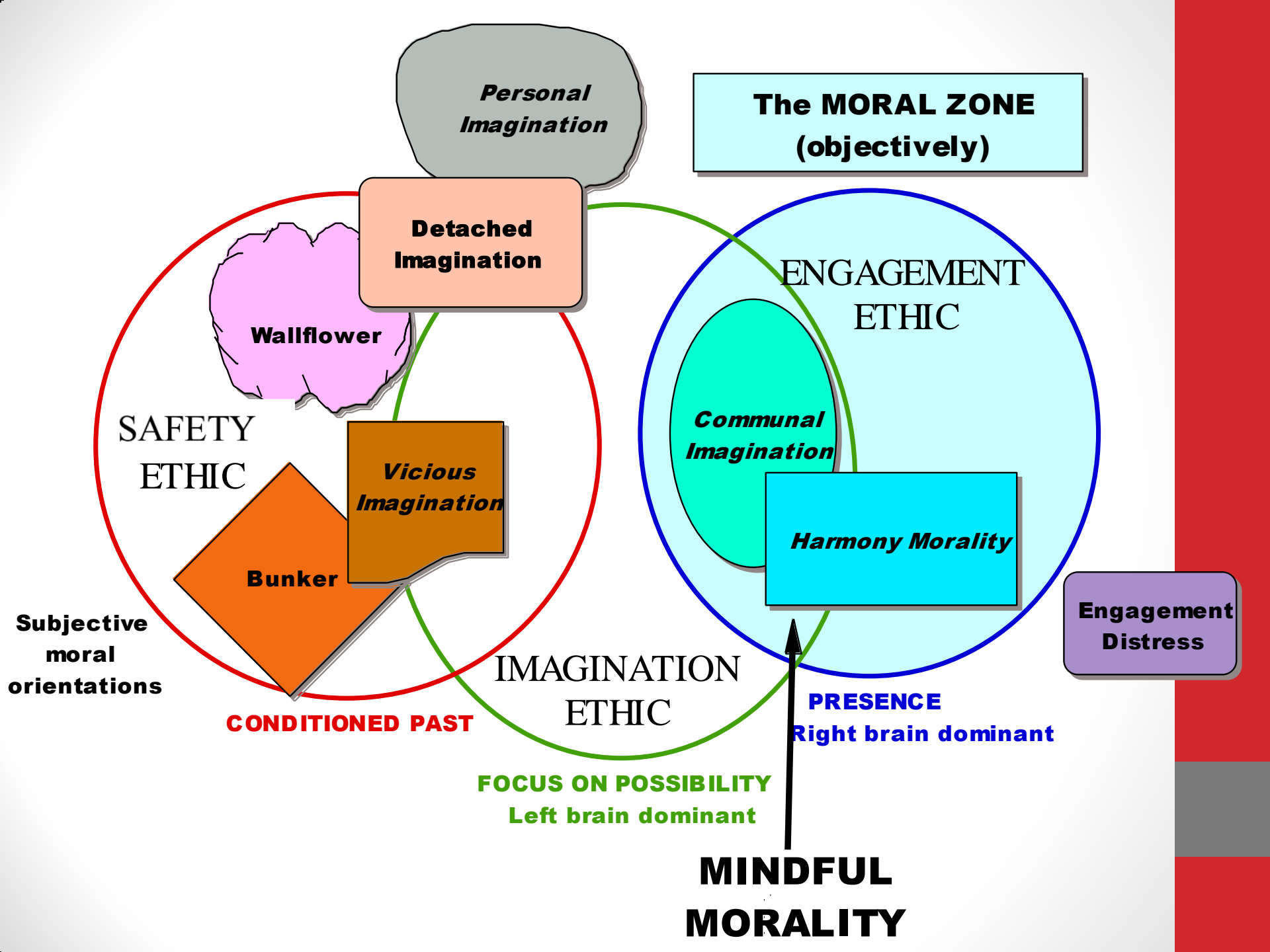
THE
EMPATHIC
CIVILIZATION



THE RACE TO
GLOBAL CONSCIOUSNESS
IN A WORLD IN CRISIS

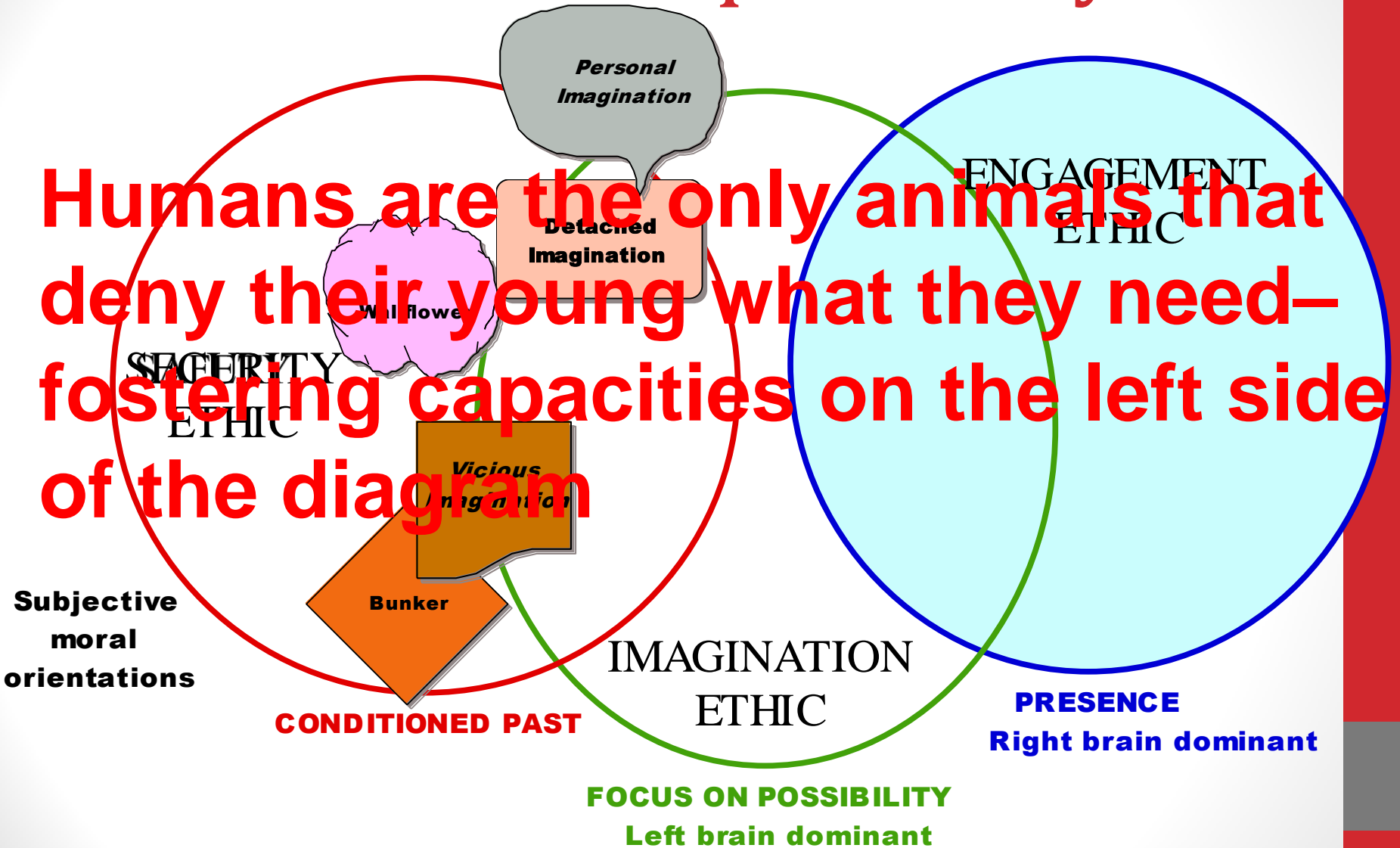
JEREMY RIFKIN
bestselling author of *The European Dream*

- Prosocial emotions are active
- Perception of possible prosocial moral futures
- Primary force behind *positive* moral action
- Capabilities fostered by **good early care, secure attachment, supportive culture**



Undercare: Inadequate Early Care

Humans are the only animals that deny their young what they need—fostering capacities on the left side of the diagram





HOW IS EARLY EXPERIENCE RELATED TO MORAL FUNCTIONING?

Does early experience matter?

Early Life Sets the Stage for Moral Development

- **Mutually responsive orientation** (*Kochanska*) and **secure attachment** (*e.g., Kochanska, 2002; Weinfield et al., 2008*)
 - **Empathy** (*Zahn-Waxler, Radke-Yarrow, Eisenberg*)
 - **Self-regulation** (*Weinfield et al., 2008*)
 - **Conscience** (*Kochanska*)
 - **Openness** (*Greenspan & Shanker, 2004*)
 - **Agency/self-efficacy/competence** (*Weinfield et al., 2008*)
- **Responsiveness matters!**

The Ancestral Early Caregiving Environment

- **TOUCH:** Held or kept near others constantly
- **RESPONSIVITY:** Prompt responses to fusses and cries
- **BREASTFEEDING:** Frequent (2-3 times/hr initially), 2-5 yrs
- **ALLOPARENTS:** Frequently cared for by individuals other than mothers
(fathers and grandmothers, in particular)
- **PLAY:** Enjoy multiage play groups in early childhood
- **SOCIAL SUPPORT:** High social embeddedness
- **NATURAL CHILDBIRTH**

Family Life Project



- We measure
 - Early caregiving environment (maternal reports and/or observation)
 - Early signs of moral development in 3-year-olds
- Pilot studies:
 1. Longitudinal observational from 4 to 36 months & maternal questionnaires (*data from the Centers for the Prevention of Child Neglect; n=636*)
 2. Maternal surveys in China (n=383) and USA (n=436; n=167)
 3. Observational study in USA (n=55)

Family Life Project



- We use standardized child outcome measures
 - Maternal reports of empathy, behavior regulation, inhibitory control, guilt
- Results after controlling for mom education and income

Colleagues: Lijuan Wang, Ying Cheng, Jennifer Lefever, Jeff Brooks (Notre Dame), Tracy Gleason (Wellesley)

Parenting Practice & Child Outcomes

	Empathy	Conscience	Self-regulation	Cooperation	IQ	Depression (not)	Aggression (not)
Breastfeeding initiation							
Breastfeeding Length							
Touch							
Responsivity							
Play							
Multiple caregivers							

Longitudinal Study



682/376 mothers (tested prenatally to 36 months)
Tested 4, 6, 8, 12, 18, 24, 30, 36 months

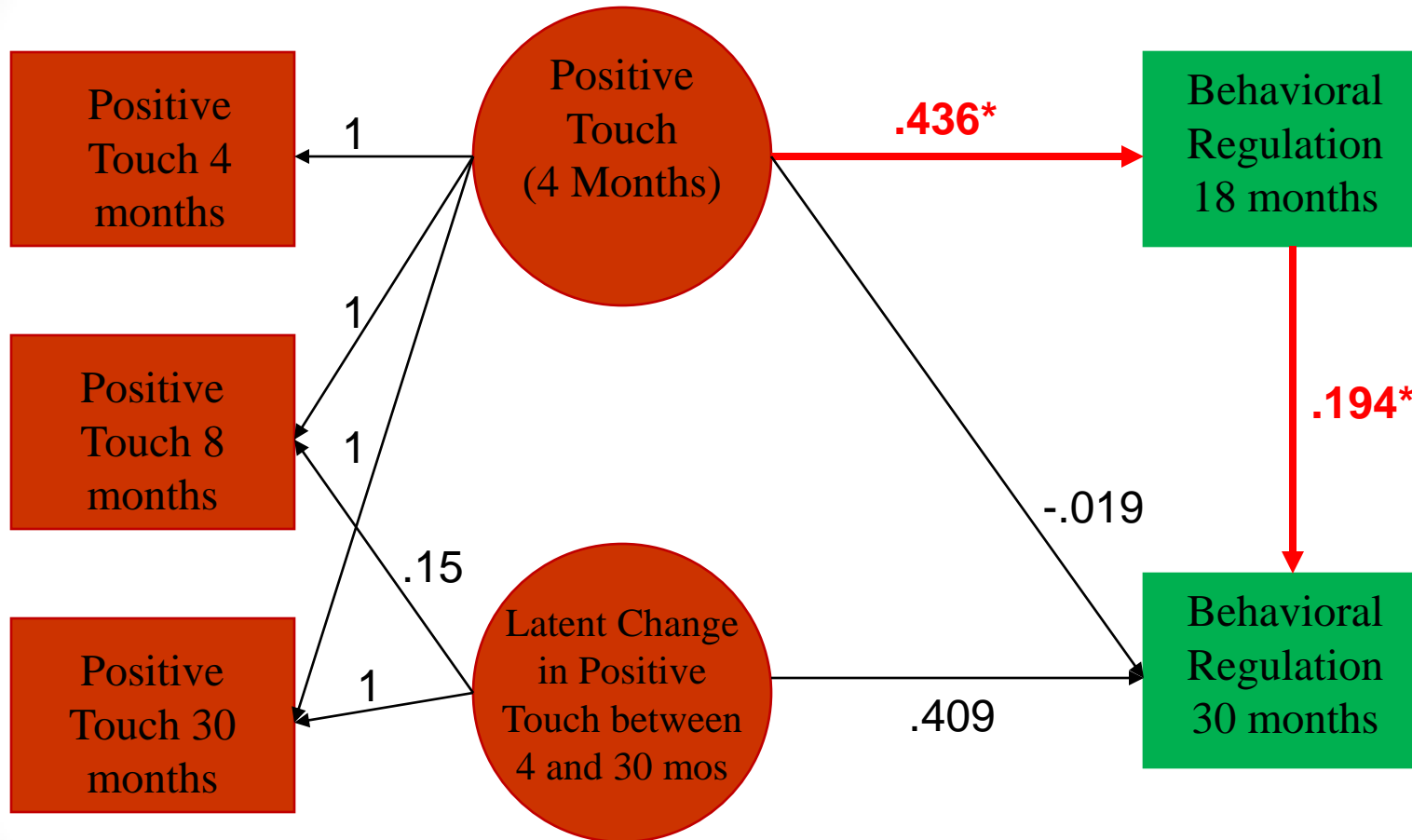
EEA-Consistent/Inconsistent Behaviors

- **Breastfeeding** (retrospective maternal report at 36 months),
Responsivity (HOME), Positive & negative **touch** (interview),
Social support (interview)

Child Outcomes (maternal report of moral behavior)

- Behavior regulation
- Social engagement
- Cooperation
- Behavior problems (aggression/depression)
- Social Competence
- *Cognitive development (intelligence, auditory comprehension, expressive communication)*

Positive Touch on Behavioral Regulation

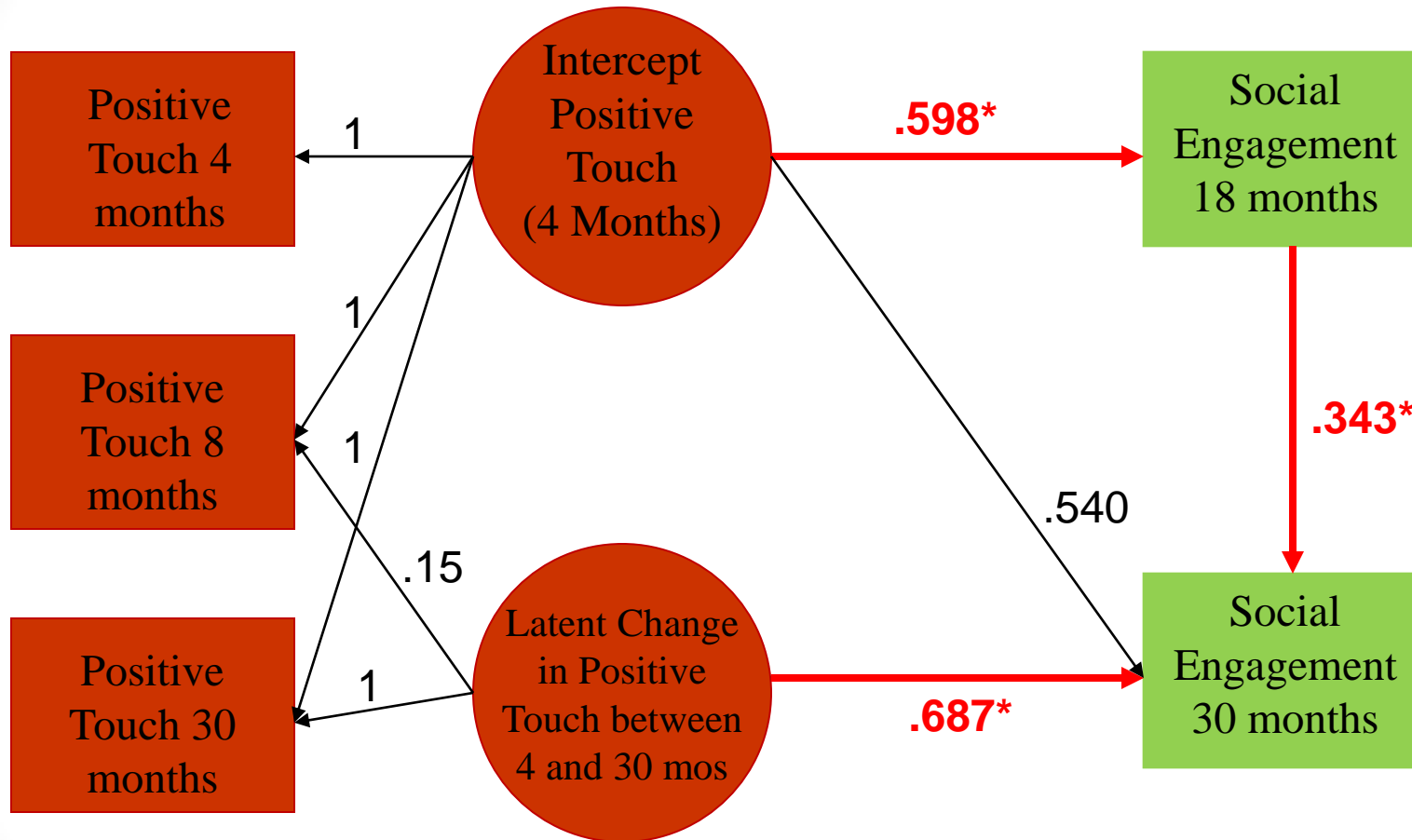


$\chi^2 (7 df) = 11.43, p = .12$

$CFI = .944$

$RMSEA = .076$

Positive Touch on Social Engagement

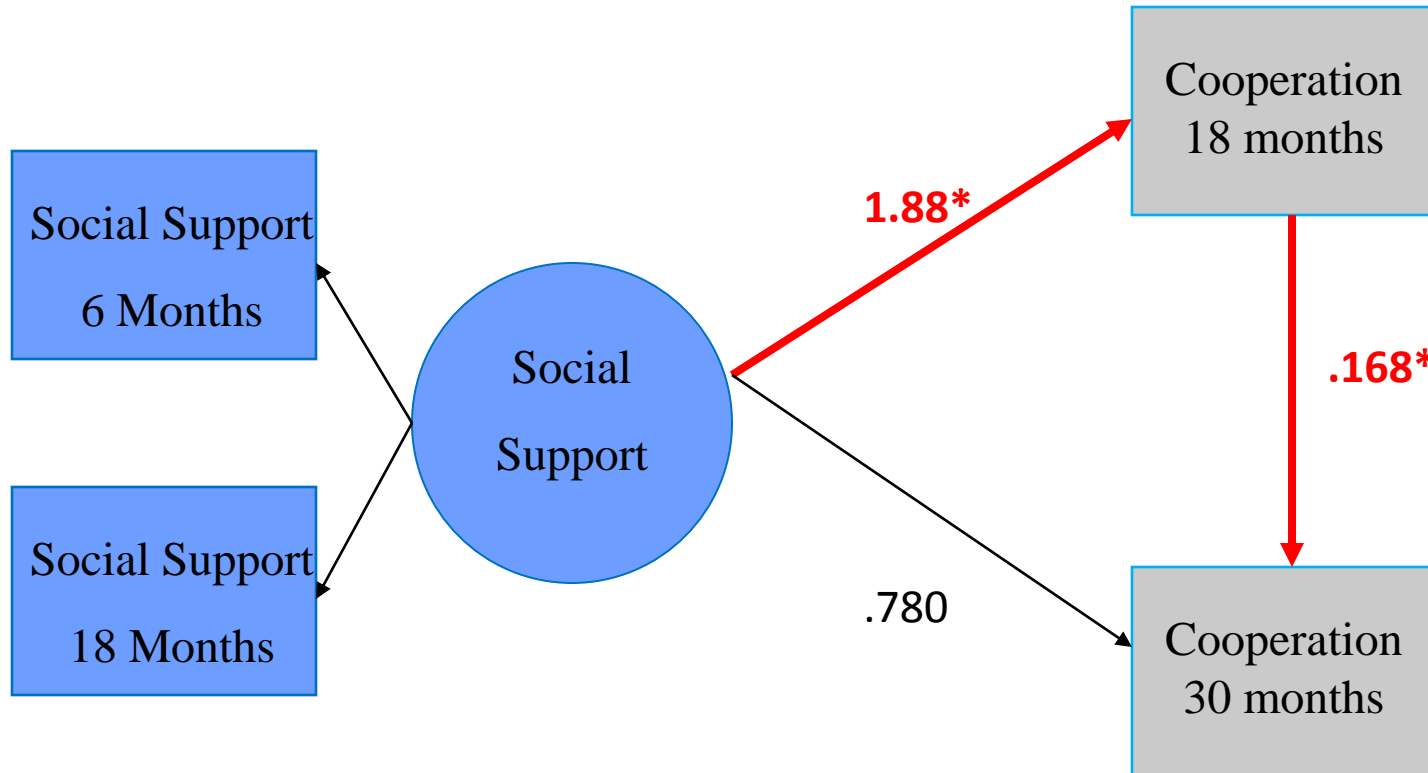


$\chi^2 (7 df) = 15.31, p = .03$

$CFI = .940$

$RMSEA = .086$

Social Support on Cooperation

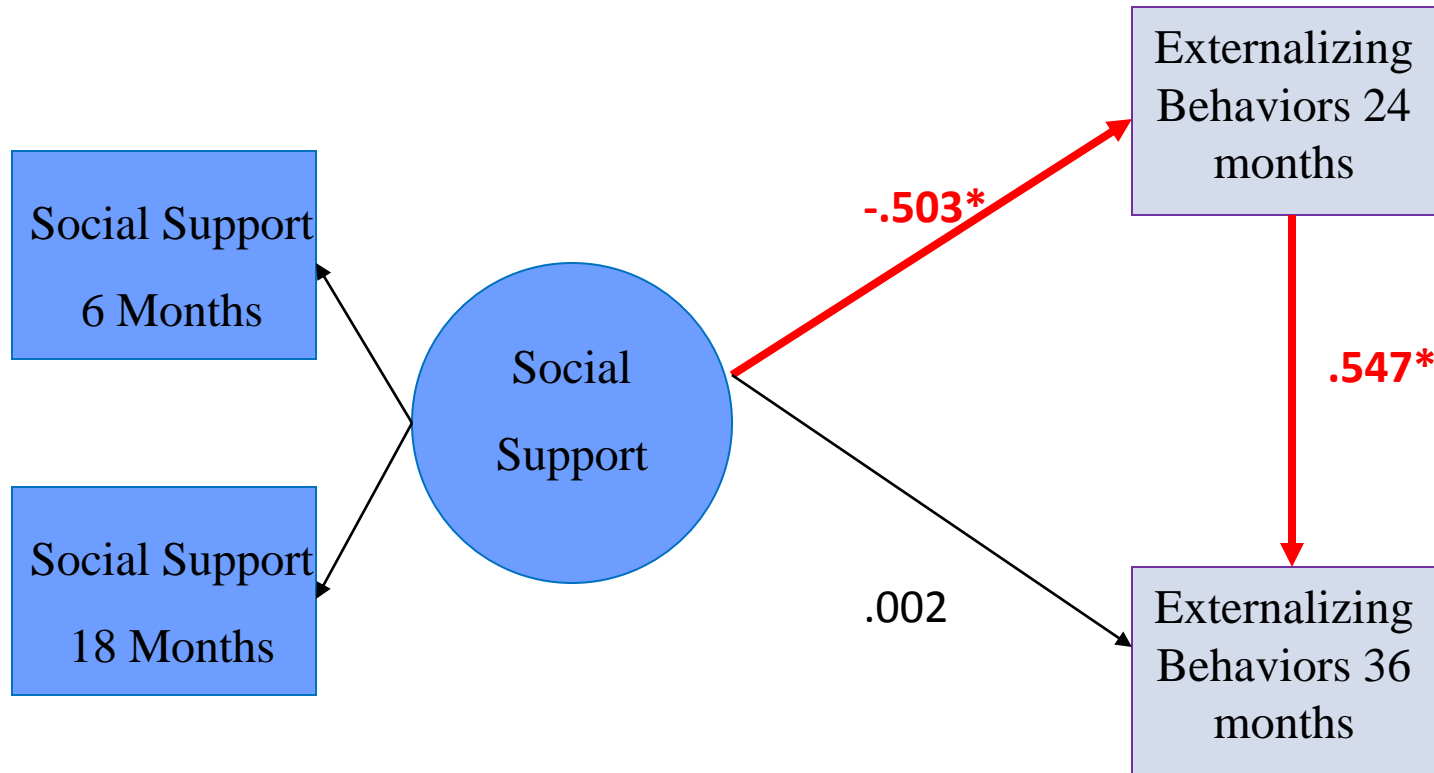


$\chi^2 (5 df) = 7.54, p = .18$

$CFI = .992$

$RMSEA = .072$

Social Support on Externalizing Behaviors

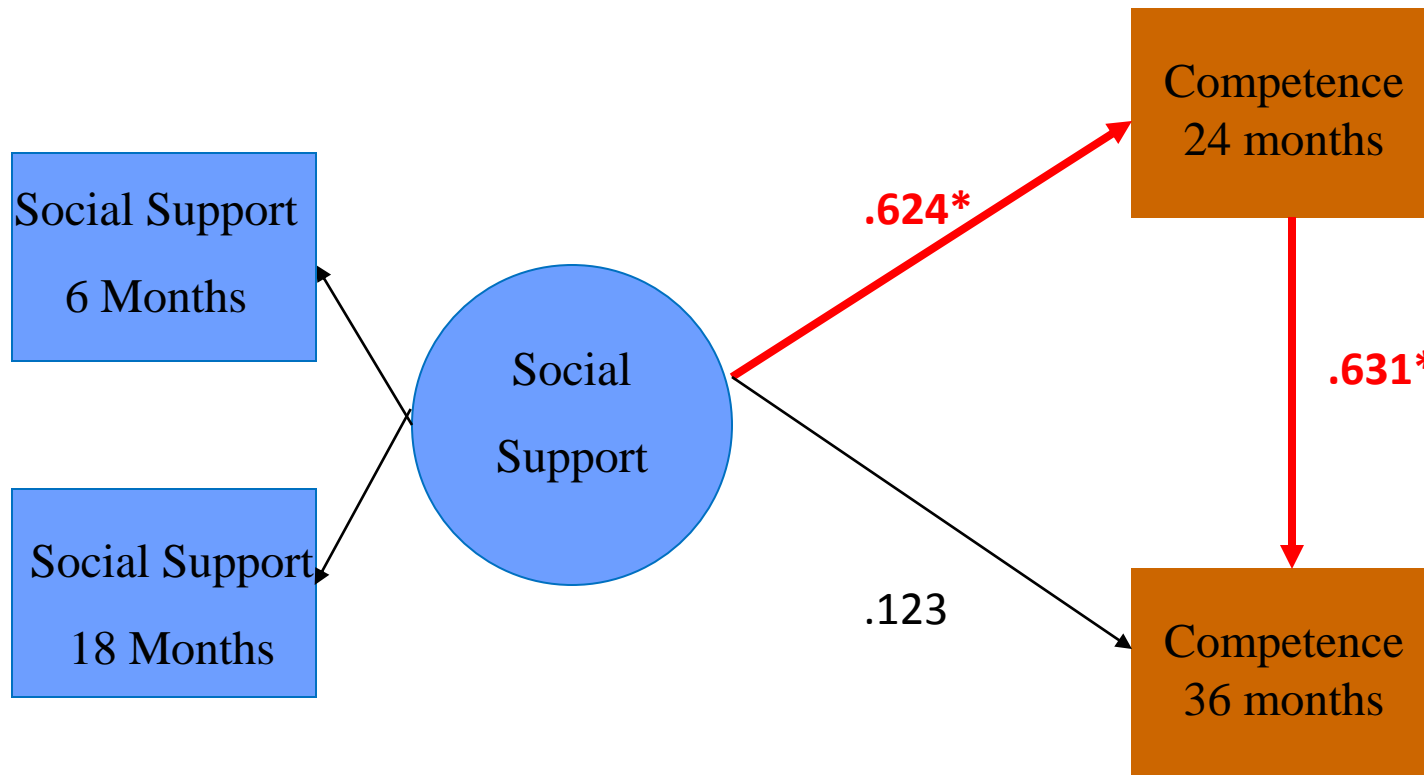


$\chi^2 (5 df) = 3.81, p = .58$

$CFI = .996$

$RMSEA = .055$

Social Support on Competence



$\chi^2 (5 df) = 2.90, p = .72$

$CFI = .997$

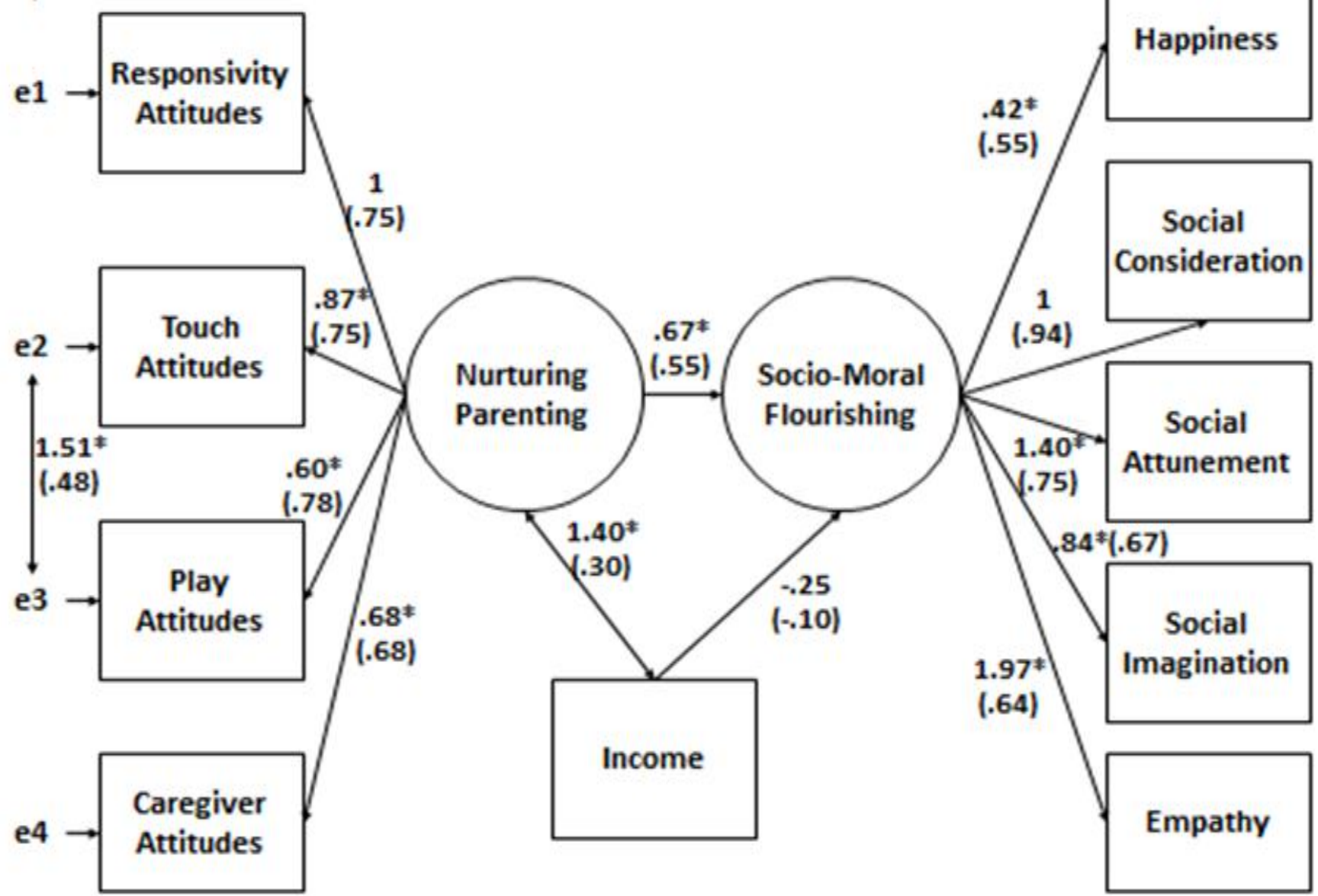
$RMSEA = .049$

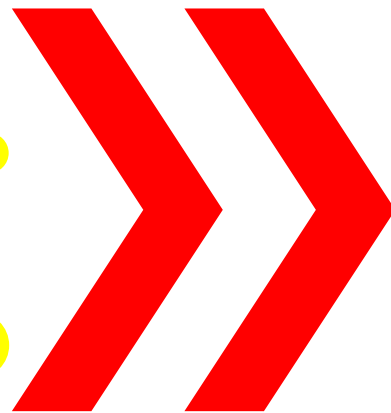
After Controlling for Age/Education, Income/needs, and Responsivity

- **Breastfeeding initiation:** less AGGRESSION at age 2
- **Positive touch:** greater INTELLIGENCE and SOCIAL ENGAGEMENT at at 3
- **Maternal social support:** less AGGRESSION and more SOCIAL COMPETENCE at 24 months, greater COOPERATION at 18 and 30 months
- **NOTE: Maternal RESPONSIVITY pattern set by 4 months of age**



A)

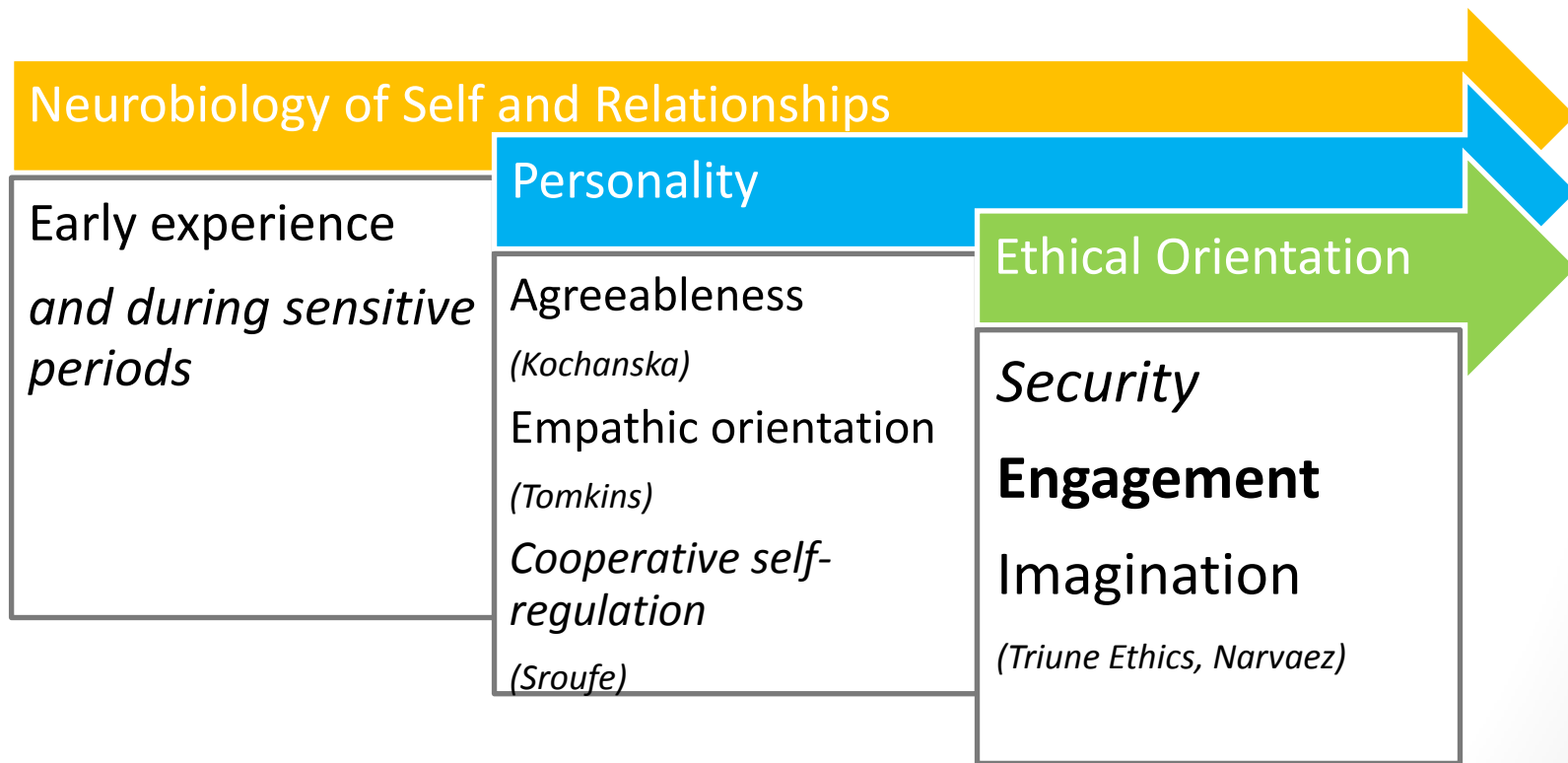


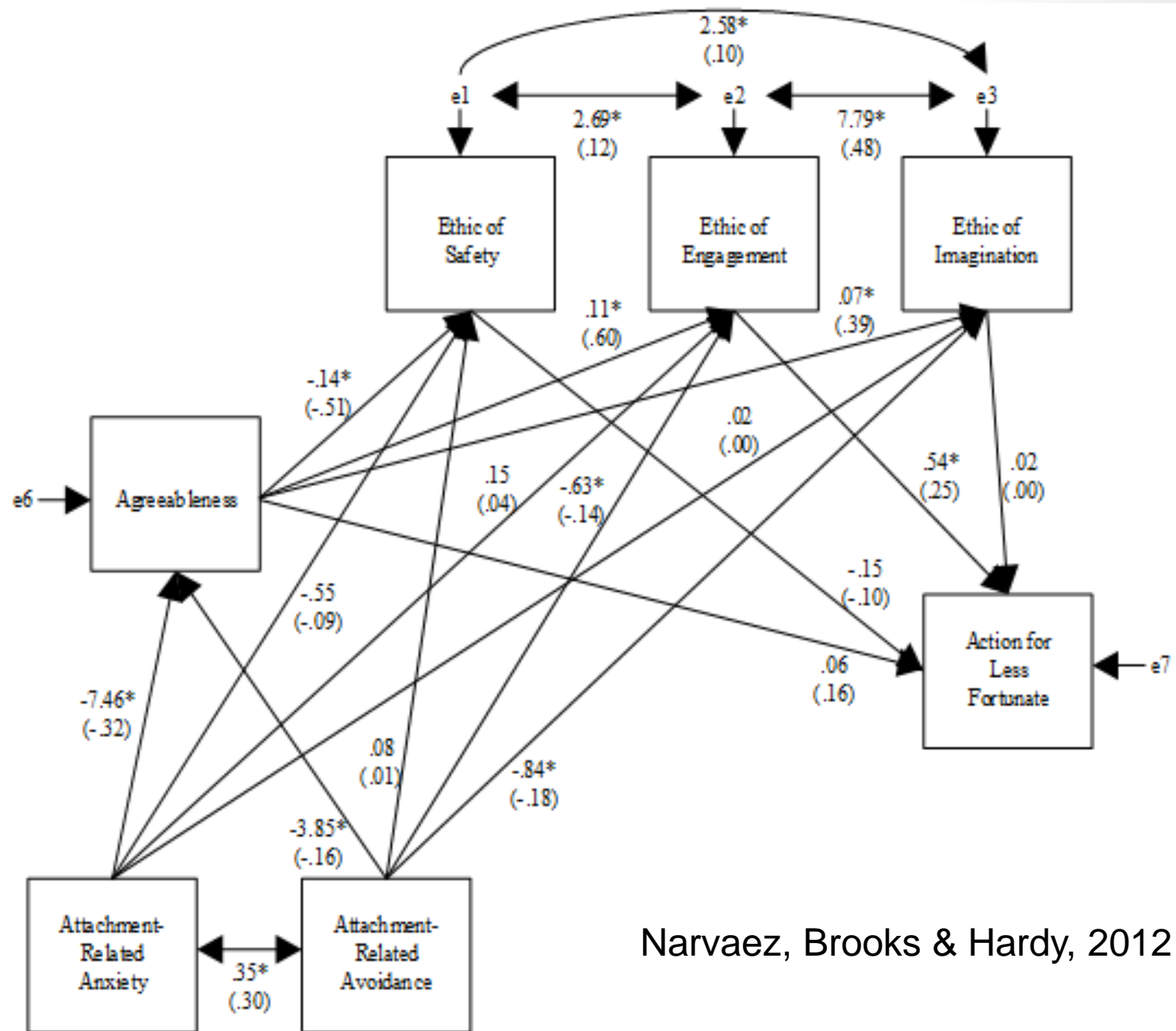


Early
Formation

Habits,
Worldview

Epigenetics of Moral Development





Narvaez, Brooks & Hardy, 2012

The moral sense is influenced by caregivers

- Social pleasure
- Empathy
- Memory function
- Social concern
- Habit control

*Personal
Imagination*

- Solo pleasure
- Detachment from relationships
- Self-concern
- Dysregulation

- Self-interest
- Competition
- Egoism
- Concern with purity, ingroup dominance, authority

**The MORAL ZONE
(objectively)**

- Social pleasure
- Empathy
- Social concern
- Habit control

- Interdependence
- Mutual relationship
- Cooperation
- Compassion
- Concern with reciprocity, egalitarian respect

Which "moral sense" ?
Which human nature?

Cultural Climates Matter

- People can build calm, communal cultures
- Nomadic hunter-gatherers
 - Ancestral parenting
 - Ancestral lifestyle
- High Engagement Ethic, Low Safety Ethic



Nomadic Forager Life (e.g., Ingold, 1999)

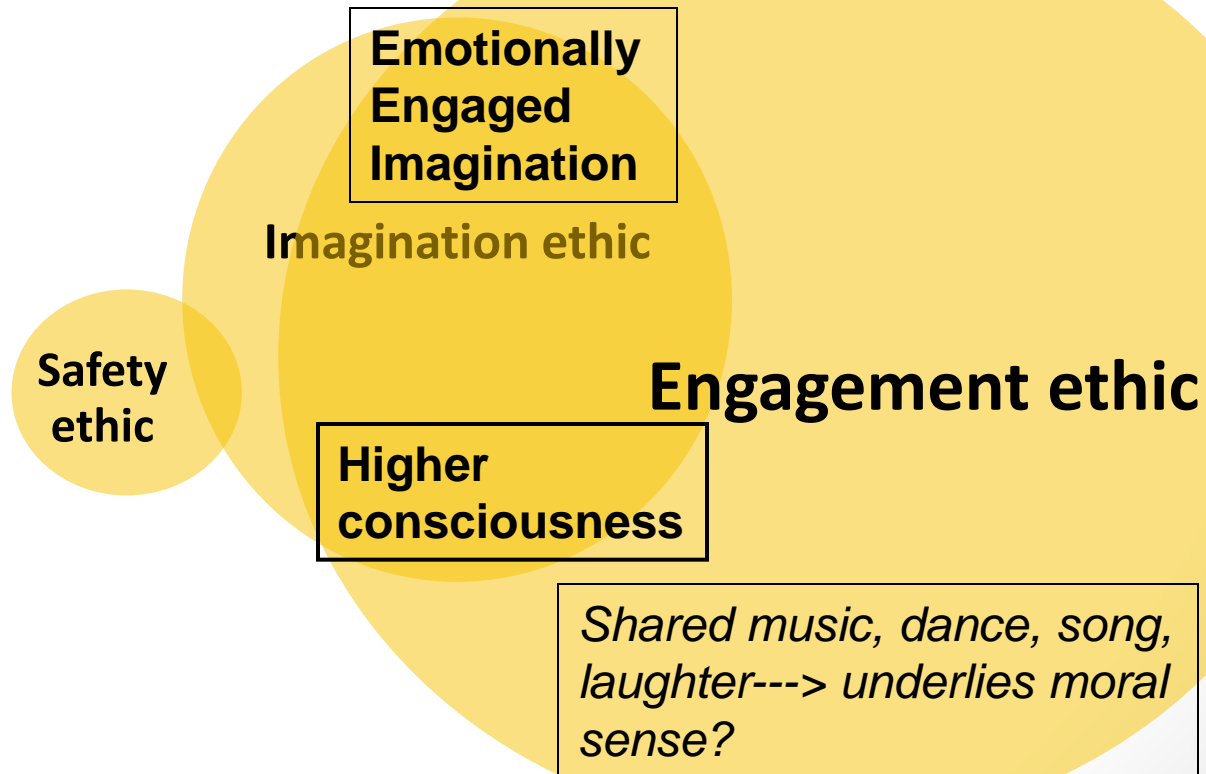
- High social embeddedness and support
- High autonomy and high communal commitment
- Socially purposeful living and deep social enjoyment
- Multi-age group living day and night
- Considerable physical contact with others (sleeping, resting)
- Fluid boundaries
- Cooperative relations with other nearby groups (kin included)
- Extensive freedom, leisure, and space
- Egalitarian relationships
- Generosity and sharing highest values
- Cheating, deception, coercion, aggression not tolerated.
- Partnership with the natural world

Understood the centrality of cooperation & relatedness of all

- Everything is alive
- Everything impinges on everything else
- Mutualism and symbiosis pervade the natural world (*Wallin; Margulis*)
- Cooperation was key to early life before genes emerged (“RNA world”; *review by Bauer, 2012*)
- Cooperation all the way down (e.g., mitochondria, genes)

Nomadic Forager Life

Subjectivity of all, Connection,
Intersubjectivity, Harmony



Western Life

Hierarchy, Status, Dominance
Alienation from Nature and
Relationships (hungry ghost)

Emotionally
Detached
Imagination

*Imagination
ethic*

Safety ethic

Shared
superstition

Vicious
Imagination

Engagement
ethic

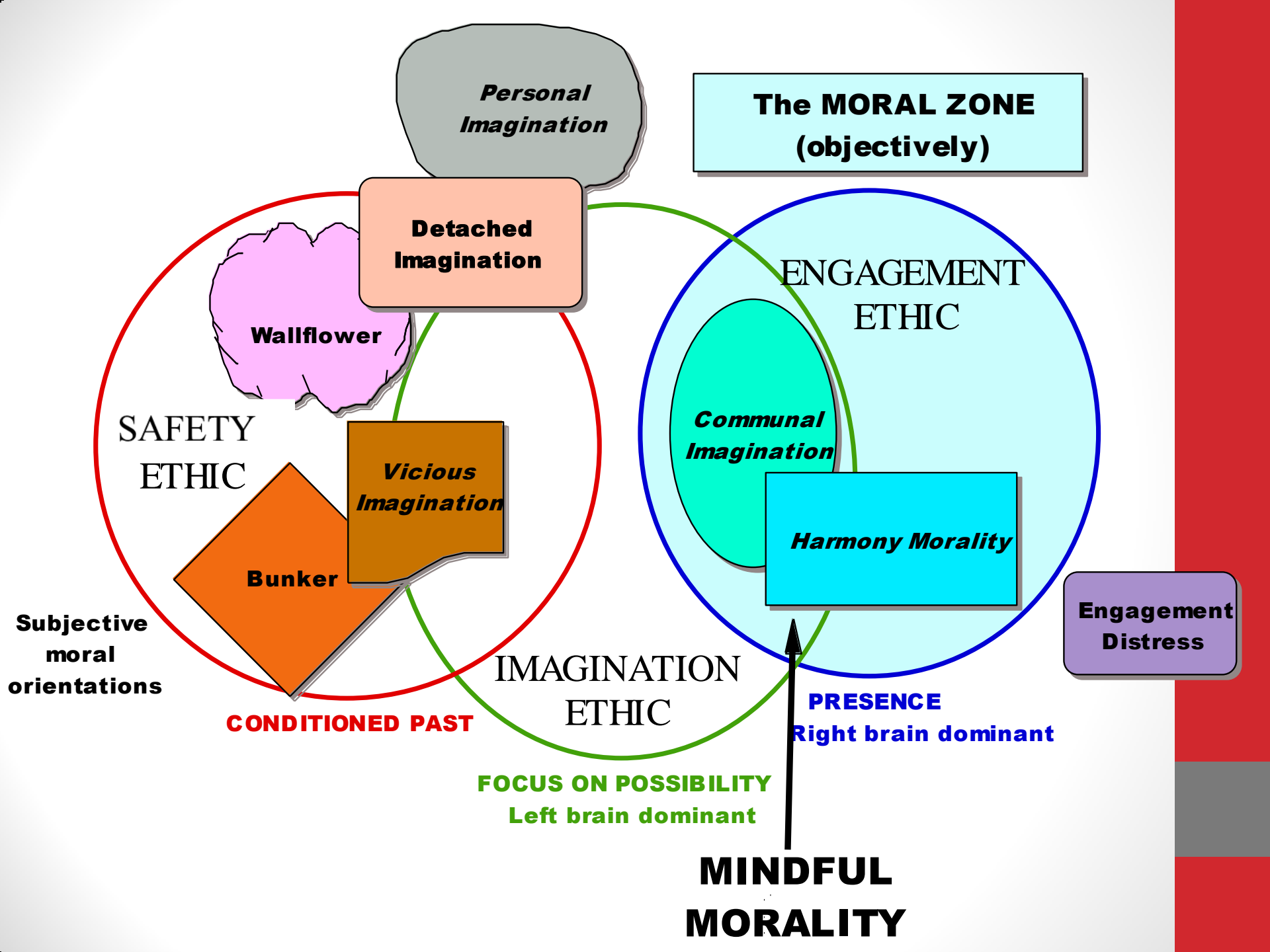
Which “moral sense”?

“Natural self interest? **For the greater part of humanity, self interest as we know it is unnatural in the normative sense;** it is considered madness, witchcraft or somesuch grounds for ostracism, execution or at least therapy. Rather than expressing a pre-social human nature, such avarice is generally taken for a **loss of humanity.**”

Marshall Sahlins, The Western Illusion of Human Nature

Implications

- Cannot assume that Western brains represent full human capacities
 - Moral development and brain function may be compromised
- Early toxic stress undermines health, wellbeing (not debatable) and morality (my point)
- Poor childrearing pushes us to lower levels of ethics (e.g., egoism), and we begin to think it is universal human nature



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2012; Table of Contents

Evolution, Early Experience
and Human Development

From Research to Practice and Policy



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Interpersonal Neurobiology

NEUROBIOLOGY
AND THE DEVELOPMENT OF
HUMAN MORALITY



DARCIA NARVAEZ

Human Evolution and Human Development, Oct 4-7, 2012, University of Notre Dame, USA



Invited Speaker include:

Frances Champagne, Frans de Waal, Agustin Fuentes, Peter Gray, Barry Hewlett, Sarah Hrdy, Ruth Lanius, Karen Lyons-Ruth, Darcia Narvaez, Kristin Valentino

- Poster and short paper proposals welcome till slots are filled.
- Support for graduate student presenters.

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