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)

- 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

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

- 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), Vagal tone (Porges)
- **BREASTFEEDING**: Intelligence, health
- **ALLOPARENTS**: Greater openness, greater maternal responsivity (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
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

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

- 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

Greenspan & Shanker 1999; Panksepp 1998; Schore, 1994
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
SAFETY ETHIC

Detached Imagination

Vicious Imagination

Bunker

Wallflower

CONDITIONED PAST

FOCUS ON POSSIBILITY

Left brain dominant

Personal Imagination

ENGAGEMENT ETHIC

Communal Imagination

PRESENCE

Right brain dominant

IMAGINATION ETHIC

Subjective moral orientations

PRESENCE

Right brain dominant

FOCUS ON POSSIBILITY

Left brain dominant
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)
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

- 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
PRESENCE
Right brain dominant

FOCUS ON POSSIBILITY
Left brain dominant

IMAGINATION
ETHIC
CONDITIONED PAST

The MORAL ZONE
(objectively)

ENGAGEMENT
ETHIC
Communal
Imagination

Harmony Morality

MINDFUL
MORALITY

SAFETY
ETHIC

Subjective
moral
orientations

Detached
Imagination

Wallflower

Bunker

Vicious
Imagination

CONDITIONED PAST

FOCUS ON POSSIBILITY
Left brain dominant

Engagement
Distress

Personal
Imagination

Engagement

Precept
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**

Hewlett & Lamb, 2005; Konner, 2005; 2010
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

<table>
<thead>
<tr>
<th></th>
<th>Empathy</th>
<th>Conscience</th>
<th>Self-regulation</th>
<th>Cooperation</th>
<th>IQ</th>
<th>Depression (not)</th>
<th>Aggression (not)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breastfeeding initiation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breastfeeding Length</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Touch</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responsivity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Play</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple caregivers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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

Positive Touch 4 months

Positive Touch 8 months

Positive Touch 30 months

Intercept Positive Touch (4 Months)

Latent Change in Positive Touch between 4 and 30 mos

Social Engagement 18 months

Social Engagement 30 months

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

$CFI = .940$

$RMSEA = .086$
Social Support on Cooperation

Social Support
6 Months

Social Support
18 Months

Social Support

Cooperation
18 months

Cooperation
30 months

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

\( CFI = .992 \)

\( RMSEA = .072 \)
Social Support on Externalizing Behaviors

Social Support 6 Months

Social Support 18 Months

Social Support

Externalizing Behaviors 24 months

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

$CFI = .996$

$RMSEA = .055$

Externalizing Behaviors 36 months

$.547^*$

$.002$

$.503^*$
Social Support on Competence

χ² (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 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)

Responsivity Attitudes → Nurturing Parenting

Touch Attitudes → Nurturing Parenting

Play Attitudes → Nurturing Parenting

Caregiver Attitudes → Nurturing Parenting

Nurturing Parenting → Socio-Moral Flourishing

Income → Socio-Moral Flourishing

Socio-Moral Flourishing → Happiness

Socio-Moral Flourishing → Social Consideration

Socio-Moral Flourishing → Social Attunement

Socio-Moral Flourishing → Social Imagination

Socio-Moral Flourishing → Empathy
Caregiving

Early Formation

Moral Nature

Habits, Worldview
Epigenetics of Moral Development

Neurobiology of Self and Relationships

Early experience and during sensitive periods

Personality

Agreeableness (Kochanska)
Empathic orientation (Tomkins)
Cooperative self-regulation (Sroufe)

Ethical Orientation

Security
Engagement
Imagination (Triune Ethics, Narvaez)
The moral sense is influenced by caregivers

- Social pleasure
- Empathy
- Memory function
- Social concern
- Habit control
Which “moral sense”? Which human nature?

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

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

- Social pleasure
- Empathy
- Social concern
- Habit control

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

Emotionally Engaged Imagination

Imagination ethic

Safety ethic

Engagement ethic

Higher consciousness

Shared music, dance, song, laughter---underlies moral sense?
Western Life

Imagination ethic

Safety ethic

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

Emotionally Detached Imagination

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
PRESENCE

Right brain dominant
FOCUS ON POSSIBILITY
Left brain dominant
IMAGINATION
ETHIC
CONDITIONED PAST
Wallflower

Bunker
SECURITY
ETHIC

MINDFUL
MORALITY

The MORAL ZONE
(objectively)

ENGAGEMENT
ETHIC

Communal
Imagination

Harmony Morality

Subjective moral orientations

CONFLICTED PAST

FOCUS ON POSSIBILITY
Left brain dominant

MINDFUL
MORALITY

Engagement Distress
Acknowledgements

Spencer Foundation
University of Notre Dame
ND Institute for Scholarship in the Liberal Arts

Jeff Brooks
Christine Cummings
Aryanne De Silva
Kayla Delgado
Janie Hensley
Elizabeth Ledden
Bradley Mattan
Gabrielle Michalak
Kellen Mrkva
Katherine Nolan
Stephanie Sieswerda
Abbey Warkentin
Human Evolution and Human Development, Oct 4-7, 2012, University of Notre Dame, USA

Invited Speaker include:
Frances Champagne, Frans de Waal, Agustín 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.

WEBSITE:
http://ccf.nd.edu/symposium/call-for-papers/
For More Information and Papers

Download papers from webpage:
http://www.nd.edu/~dnarvaez/

Email: dnarvaez@nd.edu

Psychology Today blog:
http://www.psychologytoday.com/blog/moral-landscapes/