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Triune ethics: The neurobiological roots of our multiple moralities

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Abstract

Triune Ethics Theory (TET) is a psychological theory developed to meet three goals. First, it attempts to harvest critical findings from neurobiology, affective neuroscience, and cognitive science and to integrate them into moral psychology for the purpose of informing psychological research on the moral life of persons. In contrast to dominant theories that focus on top-down, deliberative reasoning (e.g., Kohlberg), TET is a bottom-up theory that focuses on motivational orientations that are rooted in evolved unconscious emotional systems shaped by experience that predispose one to react to and act on events in particular ways. Second, it seeks to explain differences in moral functioning through a person by context interaction. Individuals differ in early emotional experiences that influence personality formation and behavior in context, while at the same time situations can evoke particular reactions, which vary with personality. Third, it suggests the initial conditions for optimal human moral development.

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0. Introduction

Although there have been many psychological theories of moral functioning within psychology, each has been rooted in a different tradition. Piaget (1932/1965) uncovered the

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roots of justice on playgrounds and formulated his concepts around biological and epistemological paradigms. Kohlberg (1969) attempted to solve philosophical problems (i.e., defeat ethical relativism) through his six-stage theory of moral development. Gilligan (1982) emphasized care over justice reasoning after interviewing women about abortion decisions, making observations based on psychoanalytic theory (Chodorow, 1978). Shweder (1993) used anthropological evidence to discern cultural differences along three sets of ethical values: community, autonomy and divinity. Krebs (2005), (Krebs & Denton, 2005) drew parallels between evolutionary cognitive tools and Kohlberg's early stages, categorizing postconventional stages as extra-evolutionary. Haidt and Joseph (2007) proposed a set of five moral modules (harm/care, fairness/reciprocity, ingroup/loyalty, authority/respect, and purity/sanctity) based on sets of principles from various theories in social and evolutionary sciences. Some of these ethics theories are complementary to one another, some contradictory and none are rooted in neuroscience.

Triune Ethics Theory (TET) is a psychological theory developed to meet three goals. First, it attempts to harvest critical findings from neurobiology, affective neuroscience, and cognitive science and to integrate them into moral psychology for the purpose of informing psychological research on the moral life of persons. In contrast to dominant theories that focus on top-down, deliberative reasoning (e.g., Kohlberg), triune ethics is a bottom-up theory, that focuses on motivational orientations that are rooted in evolved unconscious emotional systems shaped by experience that predispose one to react to and act on events in particular ways. Second, it seeks to explain differences in moral functioning through a person by context interaction. Individuals differ in early emotional experiences that influence personality formation and behavior in context, while at the same time situations can evoke particular reactions, which vary with personality. Third, it suggests the initial conditions for optimal human moral development. There are characteristics of the "environment of evolutionary adaptedness" (Bowlby, 1988) that support optimal brain development and variations in modern childrearing practices that influence the development of a fully functional "moral" brain. In this paper the three goals of triune ethics are described in broad outline.

1. Overview

TET suggests that three types of affectively rooted moral orientations emerged from human evolution. These ethical motives and behaviors arise out of biological propensities. When an individual treats a particular orientation as a normative imperative that trumps other values, it has ethical significance. Each ethic makes normative claims and is primed by the context, in interaction with personality. As a type of motivated cognition, each ethic influences what affordances are salient for action, imbuing ongoing experience with particular moral value (Moll et al., 2002). The Ethic of Security is focused on self-preservation through safety and personal or ingroup dominance. The Ethic of Engagement is oriented to face-to-face emotional affiliation with others, particularly through caring relationships and social bonds. The Ethic of Imagination coordinates the older parts of the brain, using humanity's fullest reasoning capacities to adapt to ongoing social relationships and to address concerns beyond the immediate. Each ethic has neurobiological roots that are apparent in the structures and circuitry of the human brain.

TET derives its name and inspiration from MacLean's (1973, 1990) triune brain theory which proposes three basic formations in the human brain that reflect ancestral relations to

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lower-order species. These three evolutionary strata reflect "relatively long periods of stability in vertebrate brain evolution" (Panksepp, 1998, p. 43). Anatomically and biochemically, these three formations reflect the evolution of reptiles, early mammals, and late mammals, respectively. In fundamental ways animal and human research support the basics of the theory (Panksepp, 1998). In humans, the formations are intertwined (hence "triune" and not "tripartite"); each newer circuit exploits and builds upon the propensities of the older. Nevertheless, each has a unique footprint that can be identified in human behavior. TET proposes that these footprints mark moral behavioral tendencies as well.

Accumulating research in affective neuroscience confirms the general thrust of MacLean's triune brain theory. Animals have evolved brain functions that have "psychobehavioral potentials that are genetically ingrained in brain development" as "evolutionary operants" (Panksepp, 1998, p. 55). These operants are inherited emotional command systems that help animals (and their ancestors) behave adaptively in the face of life challenges. Throughout the brain, emotional systems are placed centrally in order to dynamically interact with more evolved cognitive structures and lower-level physiological and motor outputs. As a result, there is no emotion without a thought and most thoughts evoke emotion. Furthermore, there is no emotion without a behavioral or physiological outcome. "Emotive circuits change sensory, perceptual, and cognitive processing, and initiate a host of physiological changes that are naturally synchronized with the aroused behavioral tendencies characteristic of emotional experience" (Panksepp, 1998, p. 49).

According to Panksepp's hybrid model of emotional functioning, many of the emotional component systems in the brain come together as a function of learning. In his view, "emotions are learned states constructed during early social development from more elemental units of visceral-autonomic experiences that accompany certain behavior patterns" (Panksepp, 1998, p. 44–45). The basic neural–emotion systems "generate an animal's egocentric sense of well-being with regard to the most important natural dimensions of life" (Panksepp, 1998, p. 48). These systems provide the animal with potential solutions to basic issues of survival (How do I stay intact? How do I get what I need? How do I keep what I need? How do I get and keep social supports?). There are at least four primary emotional systems in the mammalian brain that have been well described and researched (*seeking*, *rage*, *fear*, *panic*) plus additional systems less examined (*lust*, *care*, *play*, and perhaps *social dominance*, among others) (Panksepp, 1998, p. 48).

Within evolved constraints, the pattern of the brain's emotional circuitry is established in early life, particularly as a result of interaction with caregivers. In fact, recent research documents the critical importance of early experience on gene expression in emotional circuitry (e.g., Champagne & Meaney, 2006), personality formation (Schore, 2003a, b), and cognition (Greenspan & Shanker, 2004). In other words, based on the behavior of the caregiver towards the infant, genes may or may not be turned on, emotional regulation may or may not begin on a healthy path and cognitive development may or may not move in the direction of maximum growth. TET postulates that the emotional circuitry established early in life relates as well to the brain's architecture for morality and later ethical expression. The three ethics correspond to "central motives" that color perception and goal setting and which comprise part of what Moll and colleagues call the event–feature–emotion complexes that drive moral cognitive phenomena (Moll et al., 2005).

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2. The three ethics

2.1. The Ethic of Security

Three distinctive moral systems, rooted in the basic emotional systems, propel human moral action on an individual and group level. The first formation, often called the "reptilian," involves the R-complex (MacLean, 1990), or the extrapyramidal action nervous system (Panksepp, 1998). Dominant in reptiles, the R-complex in mammals relates to territoriality, imitation, deception, struggles for power, maintenance of routine and following precedent. The Ethic of Security is based primarily in these instincts, which revolve around physical survival and thriving in context, instincts shared with all animals and present from birth. Primitive systems related to fear, anger and basic sexuality reside here. Because they are primarily hardwired into the brain, these systems are less easily damaged, unlike those of the other two systems, making these the default systems when other things go wrong. First, sample physiological functions of the R-system are described; then their relations to the Ethic of Security.

Physical survival: Physical survival focuses on several emotional systems: including *seeking*, *rage* and *fear*. The *seeking* system is an appetitive motivational system controlled by the individual (Panksepp, 1998). Individual survival mechanisms operate from this reward–reinforcement system long studied by behaviorists. Autonomous exploration is impelled by the goal-driven nature of every organism to obtain and keep control over what it needs (Bogdan, 1994). Organisms automatically explore their environment unless afraid. They learn through classical conditioning which actions are effective and which are unsafe. Organisms exhibit distress when prevented from exploring, often becoming enraged (Azrin, Hutchinson, & Drake, 1969).

Physical survival involves responses that maximize safety. When safety is threatened, the parasympathetic system can trigger a fight-or-flight response (rage system); or the sympathetic system can induce freezing (fear system). The fear system operates to reduce pain and decrease the likelihood of bodily destruction. Impelled by survival instincts, the need for safety can foster a rigid reliance on what has worked in the past—habit routines that are triggered automatically based on extensive practice or instinctual behaviors.

Self-protective behaviors and values guard the life of the individual and the ingroup. Territorial animals have routines for maintaining boundaries such as scent marking. Protecting the ingroup from outsiders is instinctual, based on the natural fear of strangers common to all animals. When the R-complex feels threatened in humans, it can trigger tribalism, rivalry and mob behavior (MacLean, 1990). Emotional contagion ensues as a "superorganism" is formed, a propensity found in animals as primitive as slimemolds (Thomas, 1975). Bloom (1995) puts it well:

> The superorganism is often a vile and loathsome beast. But like the body nourishing her constituent cells, the social beast grants us life. Without her, each of us would perish. That knowledge is woven into our biology. It is the reason that the rigidly individualistic Clint Eastwood does not exist. The internal self-destruct devices with which we come equipped at birth ensure that we will live as components of a larger organism, or we simply will not live at all. (p. 325)

Whether as a mob or as an individual, in humans the "rage" system drives one to revenge, an instinct that generates a chemical reward in subcortical regions (i.e., in the

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caudate nucleus in the striatum; de Quervain et al., 2004). Moments of exclusionary infection among human groups are well documented. For example, in 1994 more than 500,000 Tutsis were massacred by extremist Hutus in Rwanda, driven by a radio campaign of hate and fear started months earlier. Thousands of moderate Hutus who did not join in the killing were also murdered. In a case the Chinese call "internet hunting," internet users became enraged after a chatroom posting by a cuckholded husband denouncing his wife's student lover. Tens of thousands joined in hounding the student online and many joined together to form teams that hunted him down at university and at home where his family had to barricade themselves in (French, 2006).

Thriving in context: The R-complex is often attendant to its second focus, *thriving in context*, through relations within the group in terms of status and dominance. In species with a dominance system, organisms may fight for status in order to obtain greater privileges, as chimpanzees do (de Waal, 2000). Winning such battles enhances individual stamina (Barash, 1987), including increasing testosterone and serotonin in alpha males, and improving opportunities of every sort (Wilson, 1980).

The R-complex is very self-focused: Am I safe? Can I get what I need? It remains calm in safe environments and when following routines. But when routines are broken or safety is threatened, the fear or rage system can kick in. The fear and rage systems are so powerful they can take over the rest of the brain ("seeing red;" MacLean, 1990). When enraged, a creature will flee or fight until a sense of safety returns.

The security focus of this brain system becomes a Security Ethic when humans use its instincts to prioritize security behaviors over other moral values. When the security ethic is activated it may focus on procuring physical survival through ingroup maintenance of hierarchy (Nisbett & Cohen, 1996) and standards, as studies of terror management have shown (Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989). An active Security ethic seeks to follow precedent and tradition, and is often maintained by the use of shaming, threat and deception (Shaver & Mikulincer, 2007; Staub, 1992, 2003). The loyalty of group members may be tested with such things as loyalty oaths (e.g., as in the McCarthy era during 1950s, USA). When not tempered by other ethics, the security ethic is prone to ruthlessness and attaining a security goal at any cost, more so than the other ethics, decreasing sensitivity to other, even moral, goals (e.g., Darley & Batson, 1973). Such singlemindedness can lead not only to decreased sensitivity towards those who get in the way but an inability to change course, reflecting Simone Weil's view, "Evil when we are in its power is not felt as evil but as a necessity, or even a duty" Weil (1947/1952). When threat is salient, individuals are more attracted to strongmen and tough policies on outsiders (Jost, Glaser, Kruglanski, & Sulloway, 2003), as happened in the USA after 9/11/2001 (Pyszczynski, Solomon, Greenberg, Maxfield, & Cohen, 2004)—any questioning of a strong military response or delving into alternative causes for the 9/11 attack was condemned as unpatriotic (traitorous) by media pundits and some politicians. This is an ethic turned towards the self: when people are fearful for their own safety, they are less responsive to helping others (e.g., Mikulincer, Shaver, Gillath, & Nitzberg, 2005).

There are likely multiple subtypes of the Security Ethic that drive behavior at a given moment, based on its distinctive emotional components (e.g., obedience from fear, aggression towards threat, dominance powerplays as in male rivalry) but due to space limitations cannot be explored here. Speaking generally, the virtues or principles highly prized under the Security ethic are allegiant ingroup loyalty (not the loyalty of love), obedience, and self-control of soft emotion. There is nobleness in submitting to an

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authority figure and "completing the mission," or accomplishing whatever goal is deemed valuable by the tradition (e.g., suicide bombing among extremist creeds).

The security ethic is part of lower evolution, driven by goodness of fit and self-interest (Loye, 2002); it has its place in individual and group survival and as a more primitive moral expression. However, it is not the driving force of human evolution as identified by Darwin; that force is initiated in the Ethic of Engagement.

2.2. The Ethic of Engagement

According to Loye (2002), the capstone to Darwin's theory of evolution was his emphasis on moral agency as the most important driving force in human evolution. In both his private notebooks (Gruber, 1974) and in *Descent of Man* (Darwin, 1871/1981), Darwin proposed that the "moral sense" initially arose from the sexual, parental and social instincts that evolved in mammals generally but especially in humans. Loye quotes Darwin from *Descent* (pp. 72–73), with slight paraphrase:

> 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] (2000, pp. 128–129)

According to Darwin's notebooks, the moral sense gives rise to the golden rule and the second commandment given by Jesus, to 'love your neighbor as yourself' (Loye, 2000).

Thus the second wave of brain evolution brought about the organization central to mammalian functioning, the limbic system and related structures (MacLean, 1990). This set of structures is also identified as the visceral–emotional nervous system on the hypothalamic–limbic axis (Panksepp, 1998). These brain formations lend a feeling tone to the functions of the reptilian brain, allowing for emotional signaling both internally (learning) and externally (sociality) (Konner, 2000). MacLean (1990) proposed that these paleo-mammalian structures are the seat of human emotion, personal identity, memory for ongoing experience, and an individual's sense of reality and truth. Notable are three signatory sets of behavior that did not exist systematically in evolutionarily species: nursing and maternal care, audiovocal communication between mother and offspring, and play.

The Ethic of Engagement is rooted in the mammalian emotional systems that drive us towards intimacy such as *play, panic* (encompassing sorrow and loneliness from social separation), and *care* which is closely intertwined with *lust*. For example, play, found only in mammals, promotes harmony and sociality. The *panic* system is a separation distress

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system vital for mammalian survival, since mammalian infants cannot survive without parental care. Indeed, mammals naturally seek contact with others, exhibiting motor agitation and vocalizing distress under isolation. In humans, conformity pressure and submission to authority may be related to fear of separation.

The functionality of these emotional systems, unlike those underlying the Security Ethic, is co-constructed by caregivers and formed by experience during an extended childhood (Schore, 1994). Mammalian emotional systems are molded in the first years of life, a process that is captured by Bowlby's ethological theory of attachment (1988, 1969). Like other apes, humans develop strong attachments to primary caregivers as a result of rearing experiences. The process of attachment and corresponding brain formation are dependent on a particular childrearing environment.

Bowlby identified the hunter-gatherer context of our ancestors during the Pleistocene era as "the environment of evolutionary adaptedness," when an infant's processes for forming attachments and completing brain development evolved. The evolutionary demands required of Pleistocene adaptation made possible the emergence of both attachment systems and moral sensibility. Hewlett and Lamb (2005) summarize the type of child care in hunter-gatherer communities, which are presumed to closely resemble the Pleistocene environment:

> young children in foraging cultures are nursed frequently; held, touched, or kept near others almost constantly; frequently cared for by individuals other than their mothers (fathers and grandmothers, in particular) though seldom by older siblings; experience prompt responses to their fusses and cries; and enjoy multiage play groups in early childhood. (p. 15)

These experiences led to a cohesive social group that lived mostly in peaceful cooperation (Dentan, 1968).

The damage caused by lack of proper infant nurturance was systematically tested in monkeys by Harlow (1986). Monkey infants reared without physical social interaction (touching, holding, playing) experienced brain damage and were violent and socially impaired as adults. These monkeys were not deprived of nourishment, nor of other social sensory stimulation—they could smell, see and hear other monkeys (sensory deprivation was systematically tested). Even when young monkeys were allowed peer contact but still isolated from adult monkeys, they were hyperaggressive and had low levels in their spinal fluid of 5-HIAA, a main metabolite of serotonin, resulting from reduced serotonin production and linked to impulsive violent and antisocial behavior in mammals (Kalin, 1999a, b) Research with elephants is also demonstrating how important adults are for normal mammalian development (Bradshaw & Schore, 2007).

Evidence for the importance of infancy and early childhood to establish a mammalian brain's emotional circuitry has been accumulating since Harlow's (1986) experiments. The *neurobiology* of attachment is far more fragile than previously believed and far more important than previously realized for lifetime brain development and emotion regulation (Gross, 2007). It is also critical for social and moral behavior. The infant's nervous system is dependent on experience, particularly through an attachment relationship, and requires the caregiver to act as an "external psychobiological regulator" (Schore, 2001, p. 202) as the brain is socially constructed (Eisenberg, 1995). "Development may be conceptualized as the transformation of external into internal regulation" where the "progression represents an increase of complexity of the maturing brain systems that adaptively regulate

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the interaction between the developing organism and the social environment'' (Schore, 2001, p. 202). Lewis and colleagues (Lewis, Amini, & Lannon, 2000) point out how mammalian brains develop capacities for ''*limbic resonance*—a symphony of mutual exchange and internal adaptation whereby two mammals become attuned to each other's inner states'' (p. 63). Moreover, ''the mammalian nervous system depends for its neurophysiologic stability on a system of interactive coordination, wherein steadiness comes from synchronization with nearby attachment figures'' (p. 84). Without this *limbic regulation*, mammals slip towards ''physiologic chaos'' (p. 86), mapped by Hofer (1987) who experimented with eight physiological systems that a rat's mother's presence coordinates. The mammalian nervous system is incapable of ''self-assembly'' (Lewis et al., 2000, p. 88), requiring limbic regulation to centrally harmonize and coordinate the various parts. Otherwise mammals grow up with erratic systems that are easily thrown off kilter during everyday events. While monkeys might survive total isolation and live with discoordinated systems, humans do not. However, abused and neglected children develop in disorganized ways similar to those of isolated monkeys. ''Because the primate brain's intricate, interlocking neural barriers to violence do not self-assemble, a limbically damaged human is deadly. If the neglect is sufficiently profound, the result is a functionally reptilian organism armed with the cunning of the neocortical brain'' (Lewis et al., 2000, p. 218). As one such example of brain formations critical to social functioning, Blair (e.g., Blair, 1997; Blair, Jones, Clark, & Smith, 1997) postulates a violence inhibitor mechanism (VIM) within the brain that is activated in normal brains when distress cues are exhibited by another, causing behavioral inhibition; the VIM is lacking in psychopaths.

Brain-building experiences are embedded in attachment relationships and are multivariate but little understood (Schore, 2003a, b). For example, the basic regulatory processes of the parasympathetic nervous system appear to be deeply affected by caregiver behavior (Anderson, Dombroski, & Swinth, 2001). This occurs in part via the regulation of the cardiac vagal tone, upon which emotional, behavioral and motor regulation are dependent (Calkins & Hill, 2007; Moore & Calkins, 2004). The parasympathetic nervous system regulates cardio output through vagal tone under environmental stress (Porges, 1991, 1996). Responsive parenting with co-regulated communication patterns are related to good vagal tone whereas nonresponsive parenting leads to poor vagal tone (Calkins, Smith, Gill, & Johnson, 1998; Haley & Stansbury, 2003; Kennedy, Rubin, Hastings, & Maisel, 2004; Porter, 2003).

The caregiver plays multiple roles in regulating the physiological and psychological development of the infant (Siegel, 1999). Hofer (1994), (Polan & Hofer, 1999) describes how the caregiver's ''hidden'' regulation of infant development cuts across sensory systems (e.g., tactile, olfactory) and influences multiple levels of functioning. For example, maternal touch can lower an infant's heart rate during a distressing experience, supporting an adaptive behavioral response in the circumstance (Calkins & Hill, 2007, p. 240). When separated, the mother's absence causes multiple levels of disruption in the infant. In contrast, skin-to-skin contact promotes healthy sleep cycles, arousal and exploration levels (Feldman, Weller, Sirota, & Eidelman, 2002).

Early childhood experiences set up the neuroendocrine systems vital for managing stressful situations and bonding to others throughout life (Carter, 1998). It is thought that peptidergic systems which involve oxytocin and vasopressin may inhibit defensive behaviors that are associated with anxiety, stress, and fear. This inhibition may allow for positive social interactions and the development of social bonds (Carter, 1998). In fact,

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oxytocin promotes caring relationships and bonding (Ferguson et al., 2000; Kirsch et al., 2005), and inhibits fight or flight and disassociative responses (Perry, Pollard, Blakely, Baker, & Vigilante, 1995). Oxytocin also counteracts the effects of stress by decreasing blood pressure and reducing activity in the sympathetic autonomic system (Uvnas-Moberg, 1997, 1998). Persistent stress appears to decrease the activity of the oxytocin system and the bonding that goes along with it (Henry & Wang, 1998). In one study, for example, Romanian orphans who did not receive personal care in the first years of life show depressed levels of oxytocin and vasopressin when in physical contact with adopted parents unlike children in contact with birth parents, suggesting a critical period for laying down the appropriate circuitry for social bonding (Wismer Fries, Ziegler, Kurian, Jacoris, & Pollak, 2005). The same neuroendocrine system appears to be involved in bonding to non-kin (Eisler & Levine, 2002), and to trusting others in experimental situations (Kosfeld, Heinrichs, Zak, Fischbacher, & Fehr, 2005).

Meaney and colleagues (e.g., Weiner, Szyf, & Meaney, 2002) have documented differences in gene expression based on maternal care. Rats with high-caring (high licking) mothers had more active versions of a gene that encodes a molecule called glucocorticoid receptor protein. Glucocorticoid, a hormone produced in response to stress, needs to be switched off to prevent over excitation. The receptor protein in the hippocampus dampens further synthesis of the protein, but only in rats who have high-caring mothers during a 10-day critical period. Rats with little maternal care have a weaker feedback system, resulting in more anxiety and heightened responses to stress. "An absence of positive social interactions early in life, especially those involving physical contact with caregivers, helps set a low threshold for activating the amygdala in response to potential threats that may persist throughout the lifespan" (Ochsner & Gross, 2007, p. 103). Moreover, there are spiraling generational effects. A low-nurturing mother breeds low-nurturing daughters, compounding the effects of poor bonding and poor brain development over generations (Meaney, 2001; Weaver, Grant, & Meaney, 2002).

Attachment and its sequilae are fundamental to the functioning of the Engagement Ethic. Although evolution has prepared the human brain for sociality and moral agency, proper care during development is required for normal formation of brain circuitries necessary for successful social engagement, cultural membership and moral functioning (Greenspan & Shanker, 2004; Panksepp, 1998; Schore, 2003a; Sroufe, Egeland, Carlson, & Collins, 2003). Human brains are reward-seeking structures, evolved to obtain rewards primarily from social relationships (Nelson & Panksepp, 1998). With adequate care, the Engagement Ethic develops fully and leads to values of compassion, openness and tolerance (Eisler & Levine, 2002). Care-deprived infants develop aberrant brain structures and brain–behavioral disorders which lead to greater hostility and aggression towards others (Kruesi et al., 1992). Inadequate care leads to deficiencies in the brain wiring, hormonal regulation and system integration that lead to sociality (Pollak & Perry, 2005; Weaver, Szyf, & Meaney, 2002). Unfortunately, parenting in the USA typically does not match that expected by evolution, whether for example it concerns nearly constant touching (only 13% of US infants sleep in an adult bed regularly; NIH, 2003) or breastfeeding: only 14% of mothers breastfeed *exclusively* at six months (which is recommended) and only 18% are breastfeeding at all at 12 months (CDC, 2004 National Immunization Survey). Two years of breastfeeding is the minimum recommended by the World Health Organization, still short of the 3–5 years found in environments of evolutionary adaptedness.

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Evidence is increasing that engagement is a primary force behind moral behavior. For example, even among primates, empathy is a common occurrence (de Waal, 1996, 2006). Moreover, for most Gentile rescuers of Jews in World War II "caring compelled action" (Oliner, 2002, p. 125); most were driven by "pity, compassion, concern and affection" (Oliner, 2002, p. 125). Despite the importance of empathy in moral behavior, most research in morality has focused on the work of the neocortex, which is central to the Ethic of Imagination.

2.3. The Ethic of Imagination

The third major brain formation to evolve was the neomammalian, which refers to the neocortex and related thamalic structures (MacLean, 1990). This somatic–cognitive nervous system on the thalamic–neocortical axis (Panksepp, 1998) is focused primarily on the external world, providing the capacity for problem solving and deliberative learning. The frontal lobes are considered the pinnacle of human evolution. They are the source of our deliberative reasoning, which includes much more than rational thought in the traditional sense. The mind "thinks *with* feelings" and "is neither an airy spirit nor an exquisite computing device but a creaky old calculator sunk in a sticky swamp of feelings" (Konner, 2000, p. 139). Thinking without feeling, as some brain damaged patients do, leads to a disruption in judgment because to make a good judgment one must feel the meaning of the judgment (Damasio, 1999). "In truth, we think because we feel what we are" (Konner, 2000, p. 141). Although they are not capable of generating their own emotions, "the frontal lobes have emerged as the highest center for the emotions" (Konner, 2000, p. 135). These structures work in coordination with the more primitive emotional systems in the older parts of the brain.

Of most importance to morality are the frontal lobes and especially the prefrontal cortex (PFC). The frontal lobes are critical in situations of free choice or situations of ambiguity. "In a sense, whether you are decisive or wishy-washy depends on how well your frontal lobes work" (Goldberg, 2002, p. 79). Damage to the frontal lobes as an adult can lead to noticeable "stiffness of the mind" (Goldberg, 2002, p. 79), since they are critical to creativity, flexible thinking and perspective taking. Damage to the frontal lobes early in life results in antisocial behavior and in an inability to recognize such behaviors as immoral (Damasio, 1999).

Connected with every distinct unit in the brain, the PFC is the only part of the brain capable of integrating information from the outside world with information internal to the organism itself (Goldberg, 2002). In humans, the PFC reaches its greatest complexity and size (29% of the human cortex, 17% of the chimpanzee cortex) but its function is only beginning to be understood. For example, Knoch and colleagues (Knoch, Pascual-Leone, Meyer, Treyer, & Fehr, 2006) demonstrate the importance of the dorsal lateral prefrontal cortex (DLPFC) for fairness-related behaviors. Moll et al. (2002) suggest that a cortical–limbic network that includes medial orbital frontal cortex, the medial frontal gyrus and the superior temporal sulcus gives humans the ability to link emotional experience to moral appraisal (Moll et al., 2002).

Other key areas in the PFC that appear to be related to moral behavior are the orbitofrontal cortex (OFC) and the anterior cingulate cortex (ACC). OFC damage in the PFC leads to poor impulse control, dysregulation of emotion, and an inability to foresee consequences. Patients with OFC damage behave like immature adolescents, and, in severe

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cases, are plainly antisocial. They are unable to control impulse because their volitional control is damaged (Goldberg, 2002). As the association cortex for social behavior, the PFC appears to contain "the taxonomy of all the sanctioned moral actions and behaviors" and its damage may lead to "moral agnosia" (Goldberg, 2002, p. 142). Found only in apes and humans and formed after birth, converging evidence suggests that the ACC is also critical to life-long emotion regulation, empathy and problem solving, and is equally reliant on caregiving for optimal development (Allman, Hakeem, Erwin, Ninchinsky, & Hof, 2001).

The Ethic of Imagination links primarily to these recently evolved parts of the brain, particularly the PFC. The Imagination Ethic allows a person to step away from the impetuous emotional responses of the older parts of the brain and consider alternative actions based on logic and reason. This ability allows for propensities lacking in the other ethics—reflective abstraction and deliberation about morality. When fully in play, the Imagination Ethic values perspective taking, reasoned argument, and moral "musical chairs" (Kohlberg, 1984, p. 299). In one way the Imagination Ethic has been studied extensively in moral psychology, at least in terms of deliberative reasoning. Deliberative reasoning, which resides in explicit memory and develops slowly through experience and training, was the focus of study by Piaget and Kohlberg and the cognitive developmental tradition more generally. However, many researchers in cognitive science have come to the conclusion that most human decisions and actions are carried out automatically and without conscious control (e.g., Bargh & Chartrand, 1999). Most of what is learned is learned implicitly, resides in tacit memory, and is not available to explicit description (Keil & Wilson, 1999). So a distinction has been made between the deliberative, conscious mind and the "adaptive unconscious" (Hassin, Uleman, & Bargh, 2005; Wilson, 2004) or intuitive mind. TET suggests that the real work of moral judgment and decision making has to do with the coordination of these two "minds."

In the parlance of TET, the Imagination Ethic responds to and coordinates the intuitions and instincts of the Engagement Ethic and the Security Ethic, which operate according to conditioned and implicitly extracted moral principles. The Imagination Ethic sorts out the multiple elements that are involved in moral decision making in a particular situation, elements such as situational press (Fiske, 2004), contextual cues (Staub, 1978), social influence (Hornstein, 1976), current goals and preferences (Darley & Batson, 1973), mood and energy (Hornstein, LaKind, Frankel, & Manne, 1975; Isen, 1970; Isen & Levin, 1972), environmental affordances (Zebrowitz & Collins, 1997), logical coherence of action possibilities with self image (Colby & Damon, 1991) and with prior history (Grusec, 2002). Wrestling with these elements includes a simultaneous assessment of multiple factors: gut feelings; principles (e.g., being a kind person, being a team player); balancing one's goals/needs with the goals/needs of others in the circumstances; keeping track of reactions and outcomes (of self and others); and consciously letting go of conflicting (sometimes moral) goals.

The Imagination Ethic has at least two powerful tools. One is the ability to countermand instincts and intuitions with "free won't" (Cotterill, 1998), the ability that allows humans through learning and willpower to choose which stimuli are allowed to trigger emotional arousal or action sequences (Panksepp, 1998). Having intellectual knowledge and the ability to deliberate upon morality allows a person to reflect on what is virtuous or vicious, making it more likely that he or she tries to become a more virtuous person in comparison to someone who cannot tell virtue from vice (Arpaly, 2003). The deliberative mind is also

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able to consider and select the environments that shape the intuitive mind (Hogarth, 2001), an ability that is critical for optimal moral and expertise development. Humans appear to be the only animals with these capabilities.

The second powerful tool of the Imagination Ethic is the ability to frame behavior; it can explain past behavior or marshal energy for goals fueled by a particular life narrative. The deliberative mind, largely through the left brain's "interpreter" (Gazzaniga, 1985), is facile in explaining any behavior, sometimes unaware that it is inventing falsehoods. Typically, the interpreter adopts the narratives of a cultural, familial or other affiliative group. The social narrative is further refined into a personal narrative, both of which propel behavior (Grusec, 2002). For example, Eidelson and Eidelson (2003) extract from extensive interdisciplinary research five beliefs that drive groups into conflict. Perhaps not surprisingly, these five self-narratives, which can operate at the individual or group level—vulnerability, distrust, helplessness, injustice, and superiority—provoke the security ethic. So on the one hand, the ruminations of the conscious mind through personal or cultural narratives can foster or countermand emotional reactions in the older parts of the brain—for good or for ill. For example, Arpaly (2003) points out how the Nazi Joseph Goebbels had occasional episodes of compassion (which he interpreted as weakness of the will) towards the Jews he was helping exterminate, leading him to perform altruistic acts for Jews against which he subsequently hardened his resolve and actions. An Imagination Ethic that fostered the belief in evil Jewry was able to overcome an Engagement Ethic that reacted otherwise. On the other hand, the deliberative mind may be vetoed by the intuitive. In the case of morality, Arpaly (2003) points out how Mark Twain's Huckleberry Finn believed that the most moral thing he could do was turn in Jim, his friend, the escaped slave. But he cannot bring himself to do it. Although the deliberative mind may learn particular principles from upbringing or schooling, such deliberative learning may not trump the deeper tacit understandings, learned from life experience. Thus the Imagination Ethic operates in interplay with the other ethics.

Like the brain areas related to the Engagement Ethic, the development of brain areas related to the Ethic of Imagination requires a nurturing environment. The PFC and its specialized units take decades to fully mature and are subject to damage from environmental factors both early (Anderson, Bechara, Damasio, Tranel, & Damasio, 1999; Kodituwakku, Kalberg, & May, 2001) and late in development (Newman, Holden, & Delville, 2005). Schore (2003a, b) marshals a great deal of evidence to show how the development of the OFC not only is vital to lifelong emotion regulation but is highly dependent on early coregulation by the caregiver in the first months of life. According to Schore, early life stressful experiences may permanently damage the OFC, predisposing the person to psychiatric diseases such as depression or anxiety and suboptimal functioning throughout life. Even with nurturing care early in life, the PFC is susceptible to damage in adolescence and early adulthood, as it is not fully developed until the mid or late twenties (Giedd, Blumenthal, & Jeffries, 1999; Luna et al., 2001). The PFC may be damaged by behavior choices such as binge drinking (Bechara, 2005), and violent video game playing, which suppress activation of the PFC even during normal problem solving, turning normal brains into ones that look like those of aggressive delinquents (Mathews et al., 2005). Immature brain development influences moral expression, whether in the executive functions vital for the Imagination Ethic or the emotional regulation systems vital for the Engagement Ethic. The Security Ethic is the default system when the Engagement Ethic and the Imagination Ethic have been poorly nurtured by the caregiver and community.

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The Imagination Ethic provides for a greater moral sense than the other ethics. Although humans have evolved to favor face-to-face relationships and have difficulty imagining those not present (such as future generations), the work of the Imagination Ethic provides a means for a sense of community that extends beyond immediate relations. Humans are at their most moral, following Darwin's moral evolution, when the Ethic of Engagement is linked with the Ethic of Imagination.

3. *Building a full moral personality: individual differences in moral functioning*

Agreeing with Wong (2006), TET suggests that there are multiple true moralities. TET postulates that the three ethics are present in behavior from a young age, at least partially (deliberative moral reasoning and executive functioning mature slowly). The availability of the three ethics, sometimes concurrently, contributes to the "conflicts between basic moral values" which results in "moral ambivalence" because of underlying "moral value pluralism" (Wong, 2006, p. 6) that individuals often feel.

TET views situations as primes for one or more ethical orientations but within a social–cognitive view of moral personality, which finds dispositional markers in the "person-by-context" interaction (Lapsley & Narvaez, 2004). That is, particular environments may press individuals to activate one or another ethic. At the same time, dispositional tendencies towards one ethic or another, canalized from childhood and life experiences, interact with the power of the situation on individual behavior.

3.1. *Dispositional tendencies*

Dispositional tendencies towards one ethic or another may develop from extensive environmental support in formative years. These may include different subtypes, but only the basic types are mentioned here. If there is healthy brain development in childhood (as manifested in secure attachment and functional empathy and executive components), the person is able generally to reach out to others in empathy when they are in distress. Mikulincer and Shaver (2005) review their studies showing the positive relation between secure attachment and compassionate behavior. A person with a chronically accessible Engagement Ethic, then, is assumed to have had early embodied experience and sensorimotor memory for reciprocity and emotional intersubjectivity, resulting in strong attachment and strong empathic responses (like most Gentile rescuers of Jews in WWII; Oliner & Oliner, 1988). Processes of reward and memory established in early childhood enhanced the capacity to affiliate with others (Depue & Morrone-Strupinsky, 2005; Nelson & Panksepp, 1998). With an open, accepting ideo-affective posture (Demos, 1995; Tomkins, 1965), feelings of empathy are more accessible than feelings of anger or hostility and a more agreeable personality ensues. In fact, caring moral exemplars are high on agreeableness (Matsuba & Walker, 2004).

In contrast, a person can have a foundational sense of insecurity based on early childhood experiences of extensive distress that together promote a distrustful view of the world. This is notable in attachment disorders, which can make a person less empathic and receptive to others (Eisler & Levine, 2002; Mikulincer & Shaver, 2005). The person whose personality is dominated by the Ethic of Security may have a "stressed brain" formation from trauma or neglect (Newman, Holden, & Delville, 2005) or in which the right brain may be partially shut down from inadequate emotional nurturance (Schore, 2003b). A stressed brain is related to

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poor attachment and bonding and to compromised social abilities: "Stress during infancy that is severe enough to create insecure attachment has a dissociative effect, disrupting right hemispheric emotional functioning and species preservative behavior, and a permanent bias towards self preservation can become an adult trait" (Henry & Wang, 1998, p. 863). The security ethic may be enhanced not only by neglectful parenting (in terms of evolutionary appropriateness) but also by harsh parenting. The latter parenting style is linked to authoritarianism (Milburn & Conrad, 1996) and likely aggravates the *fear* and *rage* circuitry linked to the Security Ethic. For example, those who score high on authoritarianism endorse the values of a security ethic: Right-Wing Authoritarianism is related to valuing social conformity, tradition, and security (e.g., Altemeyer, 1998); Social Dominance Orientation is related to valuing power and devaluing benevolence (Cohrs, Moschner, Maes, & Kielmann, 2005; Duriez,Van Hiel, & Kossowska, 2005). When the environment is considered chronically threatening self-protection may become the predominant orientation of the personality (Eisler & Levine, 2002). For example, Caldji, Diorio, and Meaney (2003) found that the brains of infant rats subjected to stress from parental care are permanently altered in GABA-ergic function in the ventral medial PFC and the amygdala. "Chronic stress increases the ability of the amygdala to learn and express fear associations, while at the same time reducing the ability of the PFC to control fear," leading to a vicious cycle of greater fear and reactivity (Quirk, 2007, p. 39). Those with poor attachment or stressed emotional systems are more likely to exhibit aggression as a normal mode of self protection (Hart, Shaver, & Goldenberg, 2005).

An extreme Security Ethic orientation fits with the received view of human nature, that we are violent, self-interested, and hierarchical. But the received view may be veridical only under certain conditions. Social groups may enhance the security ethic by focusing on threat, cultivating a disposition that suppresses the engagement ethic A foundational sense of insecurity thwarts feelings of empathy and further highlight issues of security. An interesting example of the security ethic in ascendance is a report that 90% of members of an evangelical congregation left after the pastor began to preach an inclusive rather than an exclusive message, saying that the whole world would be saved not just those of their brand of faith (National Catholic Reporter, 2005). When a security ethic is a cultural norm, inclusivity is an unwelcome message. When ecological circumstances—a person by context interaction—situationally increases perceived threats to "tribal" or in-group safety or when early experience creates a dispositionally "stressed brain," a self-preservation mode will prevail. Triune ethics accounts for this variation in human nature.

A personality dominated by the Ethic of Imagination is able to move beyond immediate self interest, to conceptualize alternative social systems, think impartially about moral problems, counteract harmful instincts and intuitions or behave altruistically in circumstances that evoke the Security Ethic (Frankl, 1963). However as pointed out earlier, when threat is high (and Engagement Ethic is low), a personality dominated by the Imagination Ethic will likely imagine creative ways to maximize safety and dominance, be prone to negative attributions, focus on 'being strong,' respond to his/her worst instincts and intuitions, and perhaps morally disengage (Bandura, 1999).

3.2. Situational priming

As several have stated, the power of the situation is often underestimated (Doris, 2005; Zimbardo, 2007). TET postulates that the situation or context primes one or another ethic.

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For example, the Engagement Ethic may require, for most people, an environment characterized by safety, caring and belonging. Indeed, children in caring classrooms tend to be more prosocial (Solomon, Watson, & Battistich, 2002). The Imagination Ethic may also require surrounds that promote hope and transcendence (Frederickson, 2002). When a particular ethic is primed, it is presumed to influence one's perceptual sensitivities (Neisser, 1976), affective expectancies (Wilson, Lisle, Kraft, & Wetzel, 1989), rhetorical susceptibilities (attractive fallacies), behavioral outcome expectancies and preferred goals (Mischel's "subjectively valuable outcomes," Mischel's, 1973, p. 270), and perceived affordances (social, physical and action possibilities). For example, when the security ethic is in control of one's perceptual and response systems, the affordances for behavior centralize around self-advantageous and ingroup-advantageous actions. There is evidence from laboratory studies that a person can be primed for the Security Ethic (e.g., terror management studies) or for the Engagement Ethic (e.g., attachment priming) where subsequent helping behavior varies accordingly, along with attitudes towards and treatment of outgroup members (Hart et al., 2005; Mikulincer & Shaver, 2001). However, there is always a person by context interaction (Cervone, 1999). For example, although aggression cues promote hostile thoughts and actions generally, individuals high in agreeableness are not primed for aggression in these circumstances but activate prosocial responses (Meier, Robinson, & Wilkowski, 2006).

4. Relation to other moral psychological theories

According to Lakatos (Lakatos, 1978) a progressive research program is one that accounts for the facts of rival programs while also anticipating novel facts, some of which have been corroborated. In this section, TET is briefly linked to other theories of moral development and some anomalies in the field are addressed.

TET is wedded to neurobiology and cognitive science; evolution and neurocircuitry are central to the theory. The insights from cognitive science about the dual mentality of the human mind—as deliberative mind and intuitive mind—also contribute to a broader understanding of human moral propensities and fallibilities. TET ethics emphasize the importance of the unconscious systems in moral response. As noted above, the wiring and reactivity of the brain, and the rehearsed responses all contribute to the ethics that drive behavior. If the wiring for emotion regulation and social pleasure go awry, moral intuitions may be scant or twisted, requiring a more externally driven, rule-based moral compass.

The dominant moral development theories in the 20th century largely ignored the unconscious and the emotions, focusing instead on deliberative reasoning and external, rule-based morality. Nevertheless, TET can link to these theories. For example, Piaget's heteronomous morality, looking outward for guidance on how to behave and fearful of immanent justice, aligns with the Security Ethic. In contrast, an embodied sense of attachment and relational morality which underpin the Engagement Ethic are aspects implicitly assumed by Piaget's autonomous morality—a sense that rules are contractual, subject to agreed upon change depending on current needs of group members—and which when broadly construed require the Imagination Ethic.

Kohlberg approached the study of moral development using impersonal dilemmas to tap structural changes in cognitive development according to deontological judgments of justice (Colby et al., 1987). Kohlberg's theory was weakened by several problems including

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developmental regression to earlier stages in his invariant hierarchical stage sequence, the rarity of postconventional reasoning in his interviews, and the small correlation between reasoning and action (for a review, see Rest, Narvaez, Bebeau, & Thoma, 1999). Neo-Kohlbergian theories have addressed these and other issues. For example, Rest et al. (1999) suggest a soft-stage model of stage development in which development has to do with a shift in the distribution of preferred reasoning; earlier stage reasoning continues to be available as alternative schemas. When a test of tacit knowledge like the Defining Issues Test is used, considerable postconventional thinking in respondents is uncovered (Rest et al., 1999; Rest, Narvaez, Bebeau, & Thoma, 2000). Since most of what a person knows is tacitly held (Keil & Wilson, 1999), it is not surprising that implicit tests of moral judgment find more substance than explicit interviews (Narvaez & Bock, 2002).

Kohlberg's moral reasoning stages align developmentally with different TET ethics, indeed Krebs (2005) maps Kohlberg's stages 1–4 to phylogenetic development. Stages 1 and 2 correspond to the orientations of the Security Ethic. Kohlberg's Stage 1 thinking reflects an emphasis on safety by avoiding punishment. Stage 2 thinking is focused on 'doing what you want' (*seeking*) with some wariness of limits imposed by others. Like Kohlberg's preconventional stages, the Security Ethic is very concerned with self preservation and personal gain, although it operates primarily implicitly. It can easily dominate thought and behavior when the person or group is threatened, shutting down other systems for information processing and action governance (MacLean, 1990). Implicitly, self preservation and ingroup survival are reflected in Stage 4 law-and-order thinking, which emphasizes a heteronomous orientation to inflexible rules, to allay chaos and disorder, although with much more cognitive sophistication and an awareness of society that is missing explicitly in stages 1 and 2.

Although the Engagement Ethic may be seen to reflect Kohlberg's stage 3 (be nice and make friends), it is better aligned with empathy development (Hoffman, 2000) which crosses species (de Waal, 1996). Whereas Warneken, Chen and Tomasello (2006) provide evidence that children as young as 18 months or younger show altruistic helping when the goal of the helpee is clear, they find the same is true for chimpanzees and other animals. Gilligan's (1982) proposal of an alternative care ethic may also be associated with the Engagement Ethic. Even Gilligan's three-phases may fit with TET in that her first phase reflects a Security Ethic orientation, although TET expands what that means to more than self protection to include self assertion. Gilligan's second phase reflects an Engagement Ethic orientation, yet perhaps in a more extreme, almost pathological way. The third phase offers a balance between self and other that the Imagination Ethic can construct. Although TET theory would contend that the most advanced position would include empathy for the non-present, non-familiar Other, which Gilligan's theory tends to neglect, her theory moved in the right direction by emphasizing the role of emotions and the role of the self in context.

Kohlberg's postconventional or principled reasoning, Stages 5 and 6 representing the most sophisticated justice reasoning, aligns with the Imagination Ethic. The work of these stages is deeply rooted in frontal lobe activity and therefore requires appropriate childhood grounding and developmental maturity. For verbal articulation, they may also require deliberative study (Narvaez & Gleason, in press). Cushman, Young, and Hauser (2006) suggested that some types of principles are intuitive and inaccessible. Matching principles behind judgments with justifications, they found that moral judgments were sometimes accompanied by access to reasoning and sometimes not. However, familiarity (expertise)

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may play a role in the ability to explain reasoning choices (Narvaez & Gleason, in press; Narvaez & Lapsley, 2005), so one must not be too hasty to attribute moral 'dumbfoundedness' to lack of understanding. Most of what we know we cannot explain because it resides in tacit systems (Keil & Wilson, 1999).

Although sophisticated reasoning does not seem to require emotional engagement, challenges to Kohlberg's deemphasis on emotion have been continual. (e.g., Turiel 1983) challenged Kohlberg's weak findings of moral development among children. Using schoolyard transgressions, he contrasted judgments of harm with conventional practices, finding evidence among young children for moral sensitivity, specifically, concern for others' welfare. Greene and colleagues (Greene, Sommerville, Nystrom, Darley, & Cohen, 2001) describe how individuals and their brains respond differently to personal and impersonal dilemmas, the former evoking emotional regions and the latter "cognitive." Small and Loewenstein (2003) found that when a victim was personalized, subjects donated more funds and later reported more sympathy for the known victims in comparison to unknown victims. Dual-process models have been suggested to explain differences between affect-driven and cognitive-driven responses (e.g., Greene, in press). Haidt's (2001) social intuitionist model advocates the dominance of emotion in moral yet only evaluations of others are explained, rather than everyday moral decision making, which requires an interplay among emotion, reason, circumstance, and other factors, as noted above (Narvaez, in press).

Hauser (2006) proposed a universal moral grammar comprised of innate principles which generate automatic, inaccessible judgments. TET counterproposes that if there is a universal moral grammar, it would be rooted in the mammalian strength of emotionality and the human strength of cognition, specifically in the ethics of engagement and imagination. Much as for language, such a universal moral grammar would require a conducive environment for development and, unlike for language development, an extended period of learning with several critical periods. Thus the preparation for such a universal moral grammar might be innate but the social environment plays a critical role in how well it develops.

Cultural differences in morality have challenged moral psychology theories across the board. Most notably, Shweder (1993) proposed three ethics to explain cultural differences that Kohlberg's theory could not: community, divinity and autonomy (collapsing Kohlberg's preconventional and postconventional stages in the latter). Shweder's trio has been used to assess data collected primarily in the US and India. TET theory realigns Shweder's three ethics. The Security Ethic subsumes the simplistic notions of both the autonomy ethic (Kohlberg stages 1 and 2) and Shweder's divinity ethic (Kohlberg & Power, 1981; religious judgment Stage 1—God will punish you if you don't obey). Shweder's autonomy ethic in its simplest form focuses on unfettered *seeking*. The divinity ethic in its simplest form focuses on *safety* through following external rules and laws (although both divinity and autonomy ethics can be reformulated by the imagination ethic towards more of an engagement focus). Shweder's ethic of community aligns primarily with the Engagement Ethic, although on a primitive level it can fall into the Security Ethic (don't go against the family/community or you will be punished). In another cultural analysis and along with anthropologists, Nisbett and Cohen (1996) propose that cultures of honor (which stem from herding cultures) value aggression, dominance hierarchy, and toughness. These Security Ethic values are related to harsh child rearing in the USA (Milburn & Conrad, 1996) and around the world (deMause, 1995; Grille, 2005).

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Taking these findings into account, Triune Ethics Theory becomes a more neurobiologically-rooted paradigm that can explain the varying responses and the developmental shift from the use of one type of reasoning to another as brain areas develop through the first decades of life (e.g., articulation of post conventional reasoning is likely only possible when the PFC is fully formed). It also helps explain the disconnection between reasoning and emotion, as underdevelopment, or lack of expertise, or as an engagement ethic shutdown from a security orientation. TET views cultural ethics difference as rooted in different neurobiological value systems. Moreover, an emphasis on one orientation may canalize and become a predominant response in particular life domains, such as in politics.

5. Initial conditions for optimal human moral development

The third goal of TET is to outline the initial conditions for optimal human moral development. As noted throughout the previous discussion, TET proposes that there is a neurobiological substrate to moral personality, evident from research on early epigenetic imprinting on brain structure and the effects of caregiver emotional co-regulation or its absence (e.g., Greenspan & Shanker, 2004; Schore, 2003a, b). Much of who we are and what we do is traceable to the more ancient parts of the brain. Lewis et al. (2000) say it pointedly:

> People rely on intelligence to solve problems, and they are naturally baffled when comprehension proves impotent to effect emotional change. To the neocortical brain, rich in the power of abstractions, understanding makes all the difference, but it doesn't count for much in the neural systems that evolved before understanding existed. Ideas bounce like so many peas off the sturdy incomprehension of the limbic and reptilian brains.

The sympathetic, parasympathetic, limbic and related systems must be regulated by caregivers early on or deficits ensue and moral optimization may not be possible.

One might consider how attending to these three ethics in the ways mentioned previously provide goals for moral optimization. First, children develop a sense of security through intersubjectively safe and close nurturing that designs a "morally prepared" brain (Field & Reite, 1985; Schore, 1994). For example, we have identified that the wash of oxytocin that accompanies breastfeeding and snuggling is a pacifying and bonding agent (Carter, 1998; Perry et al., 1995; Young, Lim, Gingrich, & Insel, 2001). Second, a child develops a sense of engaged enactive participation in social life, rooted in sensorimotor sensibilities for justice (Lerner, 2002) from extensive experiences of non-verbal, then verbal, reciprocity and social exchange (Kochanska & Thompson, 1997). Not surprisingly, a secure attachment predicts early conscience development (Laible & Thompson, 2000). Caregiver responsiveness and attunement to the infant or child's needs and moods predict cooperativeness and greater conscience development in children, as do parent–child mutual co-regulation and influence (e.g., Kochanska, 2002). Third, children are provided opportunities to engage the imagination for good ends. Caregivers provide *in situ* modeled and guided training of prosocial perception and action (*enactive* learning) through what they say and do. Parents interpret events aloud in ways that structure explanatory narratives that their children later use (Stipek, Recchia, & McClintic, 1992).

The experiences that build engagement and imagement orientations are complex and extensive. Engagement morality begins not in learning rules, per se. Rather, it is a rooted in

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physiological activation patterns, "knowledge of the structure of social space, and how to navigate it effectively" (Churchland, 1998, p. 86), developing unconscious "somatic markers" (Damasio, 1994) for what are good and not-so-good actions, and developing the capability for limbic resonance with others for a satisfying social life (Lewis et al., 2000). Embodied (sensorimotor) structures are the substance of experience and "experiential structures "motivate" conceptual understanding and rational thought" (Varela, 1992/1999, p. 16). Not only do general cognitive structures "*emerge* from recurrent patterns of sensorimotor activity" (Varela, 1992/1999, p. 16), so do moral cognitive structures. Of course all of this occurs within a dynamic social environment that, in relation to the child, is "mutually transforming" (Sroufe et al., 2003, p. 229).

6. Conclusion

This has been a brief sketch of TET. Lakatos (1978) cautions that all research programs develop in an 'ocean of anomalies" (p. 147). Certainly there remains much more to be explained and worked out. Here, we did not take up the contrast between competence and performance or deeply address evolutionary psychology, empathy development, theory of mind, or emotion regulation. Moreover, there is considerable additional research evidence available to marshal in the neurosciences. Much more could be worked out related to recent findings about moral judgment. Additional discussion of normative claims is needed, especially in terms of a subjective versus objective view of behavior. What are the ranges for normal and abnormal ethical responses? How plastic is the brain if canalized in one ethic during development? Do cultures align with one ethic or another or are there multiple moralities worldwide? Furthermore, other theorists are thinking along similar lines and their theories should be reviewed. For example, there are two other tripartite theories outside of moral psychology that provide some converging theoretical streams (Eisler & Levine, 2002; Hart et al., 2005). Most important, moral psychology ought to finally embrace a "merging of psychobiological and ethological perspectives into common, cross-species, human inclusive models" (Bradshaw & Schore, 2007, p. 426). Only then can we learn the extent of human developmental necessities and our moral possibilities.

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