ECONOMIC DEVELOPMENT AND SELF-DETERMINATION: CULTURAL, DEVELOPMENTAL, AND NEUROBIOLOGICAL IMPLICATIONS OFTHE CULTURAL SHIFT TOWARD A NUCLEAR FAMILY NORM

Alexander F. Scott*

No single term or dichotomous set of terms can adequately represent the wide and complex varieties of family and household systems that exist within the many cultures of India and the United States. In each nation, ethnic and religious diversity abound along with the wide array of communities they comprise.Within each community, the basic unit of social development and function remains the family. The family system and structure, however, is directly affected by economic development. This is evidenced by various factors, including the ongoing cultural shift in India from joint family to nuclear family households. In the U.S., there is an increasing shift from the nuclear middle class family households toward other family systems, including joint family, multi-family, and multi-generational households. These trends, away from the nuclear family model in the U.S., are directly related to the widespread economic stagnation within the American middle class due to the economic polarization that accompanied economic globalization. At the same time, the definition of family is expanding in both democracies to include single parent, dual ethnic, racial, and/or religious headed, GBLTQ headed, and cohabitating/unmarried households.

More so than the shift in household systems in the U.S., India's shift from joint family to nuclear family households represents a tidal shift in bio-psychosocial development with enormous individual, cultural, and generational implications. Not the least of these being an increasing shift, both individually and culturally, from a social-determinist model toward a self-determinist model inhuman

* Alexander F. Scott, Scott Research Group, Bloomington Indiana, USA.

development. The recent explosion of peer-reviewed research in the neurobiological oxytocin and vasopressin systems affirm that biological development and psychosocial development are inextricably linked, just as Erik Erikson asserted when he stated that his theory of identity development was actually a biopsychosocial model (Erikson 1950). Without question, constructs and theory discussed here regarding India are from a "Western" perspective of India's economic development, but such a discourse is altogether proper and necessary for the advancement of cross-cultural dialogue and understanding. This was the very purpose of the generous invitation for the author to contribute to the Indian Institute of Advance Study as a Visiting Scholar. As a researcher, theorist, and scholar, the sharing of a non-native perspective of contemporary India requires that the constructs and ideological contexts be fully examined.

From a Western perspective, intimate and attachment relationships provide the developmental orientation for self and social awarenesses. The identity of the individuated adult is established in a conscious reciprocity with other, what Erikson referred to as mutuality, by providing the necessary intersubjectivity (Habermas 2002):

> I understand myself only in the "sphere of what is common" in which I simultaneously understand the other in his objectivations (Habermas 2002: 156).

The respective ego identities are then mutually validated in anacceptance that is established in the shared context of mutual understanding:

> …my whole being perceives in them a hospitality for the way in which my inner world is ordered and includes them, which makes me, in turn, hospitable to the way they order their world and include me- a mutual affirmation, then, which can be depended upon to activate my being as I can be depended upon to activate theirs (Erikson 2002: 219).

For Erikson, the establishment of this level of mutuality is "the secret of love" (Erikson 1968:219). In much the same way, Ernst Tugendhat believed that the self cannot affirm and validate an awareness of its own consciousness independently of others, but rather only in relationship to others:

> …self-consciousness cannot be satisfied when *it itself* confirms its essentiality in relation to its opposing object; rather the latter must itself confirm its essentiality for it. This presupposes, however, that the opposing object is as independent as self-consciousness itself, and this implies that it also must be a self-consciousness … The certainty of being

> the essential moment can only now really turn into truth for it insofar as it is recognized by others (Tugendhat 1986: 303).

Similarly, for Hegel "they recognize themselves as mutually recognizing one another" (Tugendhat 1986: 303). In other words, the establishment of an individuated identity or *self* requires the existence of a self-other relationship in which a critical essence of each is reflected in the other. In this way the *self*-interpretation of the life history and life experience contained by the ego-identity may be largely dependent upon a corresponding interpretation of that self by an intimate other. Because of this, the establishment of a primary-other intimate attachment relationship is a commitment to the acceptance of the other's interpretation of oneself, and a simultaneous commitment to sacrifice all other interpretations and potentialities of oneself that could be reflected in another primary-attachment relationship. In this way, a self-determined identity is closely tied to self-selected close and intimate friendships and a self-selected primary-other attachment relationship.

From Heidegger's perspective, what is at issue in a primary-other relationship is what he referred to as an "authentic existence", and for the self to make through this self-selected relationship "itself its own" (Tugendhat 1986:, 174) by establishing a mutually reciprocal authentic relationship to the other. This relationship is what Heidegger referred to as "the closest kind of being in the they" (Heidegger 2010: 126). For Tugendhat, the pursuit of the authentic self concerns a conscious choice "in knowing what is at issue, namely, myself, my own life" (Tugendhat 1986: 175). In this sense, a commitment to a self-determined primary-other attachment relationship involves a mutual understanding that what is at issue is the authentic trajectory of what Heidegger referred to as "being-in-the-world" with the "totality of entities within which man finds himself as an agent" (Tugendhat 1986:176-177).

In the joint family model, dominated by a multi-generational family system, multiple infant caregivers form the basic model of social relational awarenesses (Kurtz 1992). The significance of the family in shaping *self-multiple other* awarenesses is also asserted in NiveditaViraj Ranade's conception of Indian identity in which "the purpose of the self can only be discovered through communal solidarity" in which the family plays the central role (Ranade 2011: 59). In Western cultures, the primary caregiver attachment relationship of infancy evolves in stages of separation and individuation from the familial relationships toward an eventual *primary-other* attachment relationship by adulthood. The process of separation and

individuation provides the psychological independence necessary for successful "deeply intimate" adult relationships outside of the family (Årseth, Kroger, Martinussen, & Bakken, 2009). In Ranade's theory of the development of the individual Indian psyche, the multiple attachment relationships of infancy do not evolve through stages of separation or individuation and do not require the formation of a single significant-other attachment relationship by adulthood. For this reason, both the achievement and the awareness of authentic intimacy in a single significant other relationship is not traditionally involved in decisions about marriage and is not traditionally an important determinant of marital happiness in Indian culture (Kurtz 1992; Sandhya 2009; Ranade 2011).

These developmental differences cannot be separated from the ideological differencesthat respectively shape members of each culture. While individuation entails developmental processes of self-other distinctions, India's traditional form of social-determinism entails developmental processes of self-other togetherness or *saha* (Ranade 2011). Psychoanalytic theorist Allan Roland characterized this distinction as the development of the "I-self" of Western culture versus the development of the "we-self" of Indian culture (Roland 1982: 243). Like Ranade, Roland maintained that while self-determinism emphasizes individual I-you relationships that must be intricately distinguished, India's social-determinism emphasizes familial and communal I-we relationships that are intricately connected. He maintained that while self-determining cultures tend to socialize an awareness of individual differences, Indian cultures tend to socialize an awareness of group differences. Roland further stressed that while self-determinism often prioritizes awarenesses of the needs of the individual at the expense of the needs of others, Indian social-determinism tends to emphasize an awareness of the needs of the in-group at the expense of the needs of out-groups (Roland 1982: 243). In other words, while I-you distinctions are a fundamental part of awarenesses in the development of identity and intimacy in Western culture, us-them distinctions, particularly of family and caste, are fundamental to awarenesses in the development of identity and intimacy in India. This cultural difference in conscious awarenesses has also been characterized as an independent self orientation versus an interdependent self orientation (Sandhya 2009).

Roland's I-self and we-self distinction is strikingly similar to Heidegger's I-self and they-self distinction. In his assertion of the relationship between the I-self of the individual and the "they-self" of the community, Heidegger conceptualizes an authentic

self which must be rescued from its "lostness" in the common consciousness (Heidegger 2010: 261). That is, the authentic Being of the entity must be consciously distinguished from the "ambiguity" of the collective they-self if self-consciousness is to be fully realized (Heidegger 2010: 263). In this sense, a commitment to a self-selected intimate relationship is not only a commitment to a being-together-with in the world, but also a commitment to the actualization of an authentic world in which the individual's Being is lived rather than lost. In India, however, one's "to-be" isn't as easily separated from the "we-self" context of family and caste.This isn't to suggest that either orientation is preferable to the other, but to underscore that they are distinctly different conscious orientations of being in the world with others.

Conceptually similar to Heidegger's "they-self" is George Herbert Mead's "generalized other" which may be a better ideological fit with traditional social-determinism. In Mead's conceptualization, a "generalized other" representing the totality of identities of a given community is internalized by the individual. According to Mead, the individual "me" develops in relationship to this internalization of collective identities (Mead 1962: 173-175). However, Mead's conceptualization does not include the necessity of an authentic relationship of oneself to oneself or others. Instead, Mead's concept of self-consciousness involves only an awareness of the self's relationship to the norms, roles, and attitudes of the community. For this reason, Mead's conceptualization may be more akin to a social-determinist orientation of individual consciousness, in which the development of individual awarenesses tends to focusmore on the positions and roles of the individual in relationship to the positions and roles of others, rather than distinguishing an individuated consciousness and seeking to better understand *its* role within a culture or the degrees to which the role ascribed meet *its* needs.

For Mead, self-consciousness cannot be separated from other-consciousness in that the self can understand *itself* only insofar as it can understand the dynamics and relationships of the social "group" to which it is a member (Mead 1962: 164). For Mead, "The "I" is the response of the organism to the attitudes of the others" (Mead 1962: 175). This stands in stark contrast to Heidegger's vision of an "I-self" which must be rescued from the "they-self" if authentic self-consciousness is to be achieved. In other words, while Mead's conceptualization of the self leaves little ground for self-determination, Heidegger's conceptualization of the self leaves no ground for anything else.

From a Western biopsychosocial perspective, the formations of *self-selected* close and intimate friendships and attachment relationships outside of the family during adolescence and young adulthood are the final stages of individual development that precede autonomous adulthood. As such, they are imperative developmental features of individual self-determination. In traditional Indian society, however, separation and individuation processes and self-selection of intimate friendships and attachment relationships outside of the family do not typically play a decisive role in individual development. Within the joint family system, the regulation of intimate and attachment relationships of adolescents and young adults outside of the family also serves to limit separation and individuation from traditional familial and communal identifications.The two models of individual development represent distinctly different developmental trajectories: The "primary-other" or nuclear family model of cultural self-determination and the "multiple-other" or joint family model of cultural social-determination. Further, this implies that how intimate friendships and attachment relationships are regulated and allowed to form prior to adulthood is an integral factor in the ongoing development of each culture.

Unfortunately, alternative models to the primary-other/nuclear family trajectory of biopsychosocial development is woefully underrepresented in Western developmental literature. Although strong arguments have been made by an increasing array of developmental and social theorists that Western theories do not adequately represent development within the joint family system, the validity of the joint family model has yet toemerge. Instead, various theorists and researchers have suggested that if the nuclear family model is to be applied to joint family systems, important developmental differences need to be taken into account (Keller 2008, 2009, & 2014; Kurtz 1992; Roopnaine and Suppal 2003; Seymour 1983 & 2013; Kakar 1979 & 1994; Sandhya 2009; Ranade 2011 and Sastry 1999).

In the nuclear family model, the resolution of the first stage, basic trust, is established in the exclusivity of the infant-mother attachment relationship. This period of development that coincides with breast-feeding, the locus of themother's (primary care-giver's) primary attachment relationship shifts from the exclusive marital relationship to an exclusive infant-mother relationship. This period is concluded at the end of breast-feeding as the locus of primary attachment shifts back to the exclusivity of the marital dyad, thus initiating the period of autonomy in the child's development. Also

known as the oedipal period, the period of autonomy is the beginning of the child's awareness of self as an independent agent within the family (Erikson 1950). With the successful completion of this stage comes a lifelong process of individuation and conscious self-other relational distinctions. In Western psychoanalytic theory, the oedipal conflict and period of developmental autonomy represent:

> …an effort by the growing child to liberate himself from an oppressive, confining and restrictive dependency on one or the other or both parents. The infantile trend toward autonomy is always juxtaposed to a passive dependency wish, to a self-sufficient dual unity or a merger (back) into oneness. After the completion of the psychological separation process, higher forms of differentiated object relations appear (Blos 1987: 428).

In the joint family household, however, the analogous developmental processes function differently as they involve distinctly different developmental goals. Challenging the relevancy of attachment theory and the establishment of a Western-style form of trust in the joint family home is Stanley Kurtz. Kurtz argues that instead of an exclusive infant-mother relationship, the infant-mother interaction is purposefully distant and timed so as to shift the growing awarenesses of the child increasingly away from the mother and toward the family unit:

> I argue that psychoanalysis has moved too quickly from evidence of physical closeness between the Hindu mother and her child to assumptions about the intimacy of this pair. In fact, the Hindu mother is careful not to load her physical care with the kind of attention or "mirroring" it would carry in the West. I argue that the Hindu mother's careful mixture of care and restraint acts in a culturally distinctive manner to push the child outward, away from her and toward the group, even as it reassures the child of her caring presence (Kurtz 1992: 31).

In this way, instead of a developing sense of self and primary-other exclusivity in the awarenesses of the infant, a sense of social belonging begins to form:

> From this perspective, then, the link with the group does not so much extend the child's sense of unity with the mother as it introduces the child to a sense of belonging quite contrary to (the) selfish desire for exclusive possession of the mother (Kurtz 1992: 41-42).

While attention from the mother is careful and distant, attention from the family is not. Kurtz's argument is that this is purposefully designed to shift the developing orientation of the child toward the family group. Because of this, rather than the beginning of a Western

style oedipal conflict and period of developmental autonomy, there develops instead an oedipal alliance between the child and multiple other family members (Roopnarine & Suppal 2003) and a period of developmental belonging.

In this way, in the joint family home, the dependency wish is fulfilled by a sense of belonging to the larger family unit. In this process, a sense of autonomy and lifelong self-other relational distinctions do not begin. Instead, what develop are lifelong in-group awarenesses which are rooted in family bonds. The inference is not that there is less emotional attachment between mother and child as compared to the exclusive relationship of Western culture, but that the emotional attachment and developmental sequence beyond the mother-child relationship develops purposefully to promote familial awarenesses, affiliations, and belonging rather than individual awarenesses and individuated distinctions. Taking this developmental difference even further, Susan Seymour argues that a Western bias toward the development of an exclusive infant-mother relationship ignores the context, purpose, and legitimacy of an alternative developmental sequence (Seymour 2013). Interestingly, Seymour quotes the attachment theorist, John Bowlby, in order to make her point: "whom a child selects as his principal attachment-figure, and to how many other figures he becomes attached, turn in large part on who cares for him and on the composition of the household in which he is living" (Seymour 2013:115; Bowlby 1969: 305).

The argument made by both Kurtz and Seymour is that the developmental model of a primary exclusive attachment relationship cannot adequately represent all of the infant-mother relationships that have evolved to purposefully and legitimately function across various cultures: "we can no longer believe… that there is one basic relationship- that with the mother- from which all others are derived" (Seymour 2013:. 116). Similarly, Heidi Keller also affirms "independence from others and personal autonomy are the ideological foundations of attachment theory", but she also states that dependency on a single Western model can become a "moral judgment on maternal adequacy" (Keller, et al. 2014: 410) rather than recognize the legitimacy of an alternative developmental strategy in a variety of non-Western and non-middle class cultural contexts.

In an attempt to legitimatize each of two distinctly different alternative styles of parenting, a theory of proximal and a distal parenting styles were developed (Keller, et al, 2009; Callaghan, et al 2011). Keller suggests that a proximal parenting style in infancy is characterized by body proximity and body stimulation. In

traditional as well as subsistent societies, socialization goals prioritize social relatedness, hierarchy, obedience, and the development of compliance and are thought to foster social cohesion. A distal parenting style is characterized by face-to-face contact and object stimulation. This is principally seen in Western industrial and middle class societies where socialization goals prioritize the development of a separate and autonomous self. Based on a cross-cultural study in North America, Europe, China, and India, Keller concluded that each style offered a distinctly different model of self-development: self as a relational co-agent and self as an independent agent (Keller, et al 2009: 419).

Similar to Keller, Kurtz and Seymour, psychoanalytic theorist Sudhir Kakar also tried to shed light on the differences between Western and Indian psychological and biopsychosocial developmental objectives:

> Most of all, though, psychoanalysis in India foundered on its model of man, which is and remains a unique product of European Enlightenment. This model emphasizes man's individuality and his self-contained, encapsulated, subjective world. The unit of study is the individual, viewed as a discrete entity, in struggle against his instinctual drives but with real possibilities of choice and of autonomy. The Hindu view, on the other hand holds the person to be "dividual" (i.e., divisible). He is not a monad, but derives his personal nature, inter- and transpersonally. All affects, needs, and motives are relational and the person's distresses are disorders of relationships- not only of relationships with his human, but also with his natural and cosmic, orders. The assumptions underlying psychoanalysis are thus the highest values of modern individualism… The underlying values of the Indian view, on the other hand, stress that faith and surrender to a power beyond the individual are better than individual effort and struggle, that the source of human strengths lies in a harmonious integration with one's group, in the individual's affirmation of the community's values and it's given order, in his obedience to the community's gods, and in his cherishing of its traditions (Kakar 1994: 266 - 267).

Further, Kakar drew particular attention to a basic difference between traditional Hindu and Eriksonian general conceptualizations of early development:

> The Hindu authors of the ashrama theory did not consider the first three stages either in their psycho-sexual or in their psycho-social implications. Since they developed the states of life from a social viewpoint, it was their opinion that the upanayana ceremony, performed sometime between the ages of five and ten, was the real dividing line between the individual-individual and the social-individual (Kakar 1979: 6-7).

Again, while a wide array of variation must be acknowledged to be existing in parenting styles and psychological and biopsychosocial development in families within Indian and Western cultures, the objective is to shed light on the legitimacy of alternative models and goals of development within the very different joint family and nuclear family contexts.

In the third and fourth stages of biopsychosocial development, initiative in early childhood and industry in late childhood, there is nothing in the literature that theorizes about potential family system or cultural differences in these developmental stages. Were it to exist, one hypothesis would be that it would suggest a difference between the achievement of autonomous initiative vs. cooperative initiative in early childhood and the achievement of autonomous industry vs. cooperative industry in later childhood. Such a framework would represent another critical distinction in the respective developmental trajectories.

There are clear differences that exist between the traditional nuclear family and traditional joint family developmental trajectories throughout adolescence and young adulthood, as common everyday observations of Indian and American cultures will affirm. The primary biopsychosocial developmental objectives of adolescence and young adulthood are identity and intimacy (Erikson 1950 & 1968). While Erikson considered these developmental objectives to be consecutive processes connected by a direct link (Erikson, 1968), subsequent theorists and researchers consider these process to be concurrent and intricately intertwined (Montgomery 2005; Kerpelman 2012; Zimmer-Gembeck 2012; Beyers & Seiffge-Krenke 2010). Individual identity development and the development of intimacy are acknowledged as intricately connected because the biopsychosocial process of the development of the self takes place entirely within human interactions and human relationships. Of these, intimate relationships are unquestionably the most personal and important. What Erikson and others may not have taken into account are distinct differences within the respective family systems concerning how and with whom these processes unfold. A more comprehensive and cross-cultural theory must take into account family systems other than the nuclear family model.

A closer examination of the Western nuclear family home trajectory suggests that a general sequence of social development in intimate relationships occurs throughout adolescence and young adulthood (Collins 2003), and culminates by adulthood in a self-selected marital relationship necessary for a shared life in a nuclear family home (Sastry 1999). Although there is little separation of

genders during childhood either inside or outside of the family home, beginning in early adolescence(roughly ages 12-14 years), coinciding with middle school, there are increased opportunities for mixed gendered socialization both in school and in a wide variety of supervised after school programs. There are increased opportunities for casual and less-supervised activities as well. By middle adolescence(roughly ages 15-18 years), coinciding with high school, the increased opportunities for mixed gendered socializing typically lead to casual dating and experimentations with "exclusive" dating which may or may not be sexual. By late adolescence (roughly ages 18-21 years) and coinciding with college, casual dating evolves into a more serious exclusive relationshipwith a sexual component. In short, there is a long developmental sequence of interactions between genders (in the heterosexual dyad) that contribute to the development of identity and intimacy of both genders (Collins 2003).With marriage, there is juxtaposition and fusion of identities (Erikson, 1950) that becomes the locus of intimacy of the nuclear family home.

It should be noted that in economically developed societies, the period of adolescence has tended to become longer, with many arguing that adolescence should be formally recognized to extend into the mid-twenties (Sawyer, et al 2018). This suggests that a lengthening period of identity and intimacy exploration and experimentation may be necessary for authentic identity consolidation where greater opportunities and choices in the lifeworld are accessible. This underscores the assertion that a sufficient period for adolescence is a luxury, as it requires economicprosperity for the full exploration of anauthentic identity to be possible (Steinburg 2008). In other words, authentic identity exploration may be closely tied to economic factors (Because of this, as India is transformed by economic development (Sharma 2012) it would not be unreasonable to expect increasing identity exploration among adolescents as well as a general lengthening of the period of adolescence.) Further, as theorists such as Karl Marx have long suggested, economic development drives cultures in predictable ways as traditional values and social norms shift increasingly toward individual self-determination (Kemmelmeier et al 2003).

In the traditional joint family home trajectory, where the locus of intimacy is found in the parent-child relationship rather than the marital relationship, the sequence of development through adolescence and young adulthood takes a different path. In this trajectory with the opposite sex, the development sequence does not typically include a series of close, intimate, and sexual relationships

prior to marriage or juxtaposition and fusion of identities through marriage. Because of this, the need for mixed gendered socialization, dating, or intimate and sexual relationships by the end of adolescenceis not necessary (Saraswathi & Oke 2013). Instead, there is a segregation of genders outside of the home prior to marriage. In short, while in self-determining cultures, intimacy typically develops between genders prior to marriage, it typically does not in traditional Indian culture; and while intimacy typically develops separately and simultaneously *within* genders in Indian culture, amongself-determining cultures it typically does not. In Western cultures, it is quite commonplace to see females of all ages, and males and females of all ages holding hands, but never between males of any age. In traditional Indian culture, it is commonplace to see females of all ages and males of all ages holding hands, but rarely males and females of any age hold hands. In more economically developed areas of India, however, the site of young men and women holding hands is becoming more commonplace. Simultaneously, in what has been referred to as the "demerger" of sex and marriage in Indian culture, there is a "growing measure of tolerance" for premarital (as well as extramarital) sex (Sharma 2012: 206).

Biologically, the implications of a cultural shift from a joint family toward a nuclear family norm likely includes observable changes in neurobiological development. Research in the fields of social and cultural neuroscience is beginning to explore how cultural traits shape neurobiology and how neurobiology and genetic processes facilitate cultural traits. Further, research in the field of neuro-economics has begun to explore the relationship between neurobiology and economic factors (Chiao et al 2010). Evidence has long existed concerning the role of the neuropeptides oxytocin and vasopressin in human attraction and the formation of attachment relationships. These neuropeptides are involved in a variety of behaviours specifically associated with intimate relationships, including social bonding, pair bonding, mate-attraction, sexual behavior and infant caregiving behavior (Bales & Perkeybile 2012). Oxytocin is also associated with complex social cognitions such as trust, mentalizing (the ability to understand the mental state of oneself and others), and social motivations (Churchland & Winkielman 2012). Although the greater extent of this research is limited to mammalian and primate species other than human, the data are widely interpreted to include human intimate relationships, attachment, and care giving behaviors. Research into the role that oxytocin and vasopressin play in the development and expression of

social behaviors also support an assertion of differing psychological orientations where the development of intimate and attachment relationships are concerned.

The genetic pathways that involve the oxytocin and vasopressin systems are thought to play a critical role in variations in the evolution of human social bonding behaviors (Carter, 2014). As well, developmental variations in early social environment have long-term effects on neuropeptide systems which effect the formation of pair bonding through adulthood (Bales & Perkeybile 2012). A large number of studies point to the significance of the role of genetic variability associated with pair-bonding and attachment behaviors (Ditzen, Bradley, & Heim 2012). Genetic studies on the variation of oxytocin receptor genes have demonstrated an association with social cognition, attachment style, emotional support seeking, and prosocial decision-making (Walum et al. 2012). Further, interests in the role of heredity in the bio-behavioral mechanisms of social bonding should include each of the three types: parental, pair, and filial, which include close and intimate relationships (Feldman, et al 2013).

These studies show that the effects of oxytocin on social bonds also differ with individuals and circumstances. Variations in family structure and social rearing conditions may be associated with variations in neuropeptide receptor expression and regulation through early infancy, some of which persist into the second generation. These studies also show that the effects of housing conditions on neuropeptide receptors are not limited to early development and have an impact on the central oxytocin and vasopressin systems of the next generation (Bales & Perkeybile 2012). In all, the evidence suggests that measurable variations in the oxytocin and vasopressin systems may accompany the distinct biopsychosocial development associated with the respective cultures. For example, oxytocin is associated with the dendrite remodelling and behavioural plasticity underlying sophisticated variations in social cognition, communication, and emotional bonds in females (Ferri & Flanagan-Cato 2012). Similarly, the vasopressin system is associated with variations in sophisticated social behaviors in males including sociability, social preference, and mate preferences (Stevenson & Caldwell 2012).

Although less understood, there is also a relationship between both physical and emotional social stimuli and the production of oxytocin (Churchland & Winkielman 2012) which "specifically targets the social brain and has qualitatively distinct effects on

complex, higher-order social cognitive processes" (Churchland & Winkielman 2012: 395). The use of MRI and fMRI technologies have also shed light on human genetic variations related to oxytocin and vasopressin on brain activity in socially specific regions. Further, the emerging use of imaging technologies in genetic studies also point to a heredity component in the oxytocin system involved in human social cognition (Zink & Meyer-Lindenberg 2012). Concerning the role of the oxytocin and vasopressin systems in social behavior and inter-individual interaction, Zink and Meyer-Lindenberg conclude that investigations in genetic variations must be pursued. Only a few studies have attempted to describe the relationship between these neuropeptides and the environmental context. However, a number of studies suggest that individual differences in response to environmental signals, including variations in support seeking behaviors, are related to plasticity in various oxytocin receptor genes (Feldman et al 2013).

As applied to research in the development of identity and intimacy, a reasonable inference is that observable genetic variations in the oxytocin and vasopressin systems may be involved in the respective nuclear and multi-family environments and potentially underlie the independent and interdependent orientations. Feldman et al conclude that "the cross-generational transfer of human attachment" related to the oxytocin system "represents a trait-like dimension of the individual that probably organizes in early infancy and can serve as an index of sociability, empathy, and affiliative tendencies, perhaps across the lifespan" (Feldman et al 2013: 1159). Further, rooted in an evolutionary theory of social cooperation, there is evidence that the release of oxytocin enables the social categorization of in-group versus out-group membership by prompting in-group preferences, between-group competition, and defenses against outsiders (De Dreu 2012; De Dreu et al 2012).

The evidence suggests that attachment behaviors in children are at least in part related to the development of the oxytocin system in the infant and may have a hereditary factor (Mesguita, et al 2013). The evidence also suggests that genetic variation may moderate development between early attachment relationships and attachment in adulthood (Lee Raby, et al 2013). Studies in attachment disorders suggest that a psychosocial and genetic interaction underlies attachment behaviors (Hollander 2013). A combined neuroendocrine, genetic, and socio-behavioral approach found that genetic variations in the oxytocin system play an important role in socio-emotional age-related changes in social development

and social relationships (Ebner, et al 2013). Further, variability in the oxytocin receptor gene has also been associated with social cognition at 18 months in self-recognition and the ability to infer meaning from the behaviors of others (Wade et al 2014). The study's authors suggest that their findings support a theory that such socio-cognitive capacities are related to genetic variability in the oxytocin system. Further, the formation of non-related friendships similarly activates individual oxytocin affiliative systems relating to the role of social cues, social initiation, and motivations to bond beginning as early as three years of age (Feldman et al 2013). In Western middle-class culture, close friendships serve as a link between attachments to parents in childhood and later attachments to non-related others, culminating in pair-bonding (Feldman et al 2013). However, no studies thus far published include joint family systems in which the locus of intimate and attachment relationships remain between parent and child, and where romantic relationships are not a part of a social and developmental process in shifting attachments from biological parents toward eventual pair bonding.

Concerning the relationship between genetic variation and social development related to culture, one study explored how the oxytocin receptor polymorphism rs53576 may moderate the relationship between religiosity and psychological well-being (Sasaki, Kim, & Xu 2011). The study compared European Americans and Koreans who were more genetically predisposed to social sensitivity. The study showed that among Koreans, religiosity and psychological well-being were positively associated, but among European Americans religiosity and psychological well-being were negatively associated. The conclusion was that for individuals predisposed to social sensitivity, religion may benefit psychological well-being where culture provides an adequate context for social affiliation, but may inhibit psychological well-being in cultures that do not emphasize religious affiliation. The study also suggests that in East Asian cultures, religion may have evolved to provide solace for individuals genetically predisposed to this variant of social sensitivity, while Western culture has evolved means of addressing those predisposed to social sensitivities other than religious affiliation. A related study suggested that rs53579 was involved in East Asian and American cultural differences in emotional regulation and emotional suppression (Kim et al 2011). The research underscores the sensitivity of the oxytocin receptor gene to cultural norms (Kim et al 2010). Such studies support rather than rule out the assertion that attachment and bonding behaviors, as well as their underlying genetic and neurobiological influences,

play a role in cultural differences.

In all, a cultural shift from a joint family to a nuclear family norm may have profound and far-reaching implications, not the least of these being a significant biopsychosocial shift in both individual and cultural determinism in which economic development plays a decisive role. In addition, observable neurobiological differences between self-determining and social-determining cultures may already be obtainable through saliva samples. While the significance of the shift in family structure and the implications of a broad cultural shift cannot be overstated, current research in these fields is thus far insufficient to draw conclusions. Further research into the cultural variations in family systems and the implications for biopsychosocial and neurobiological development should be pursued.

References

Årseth, A.K., J. Kroger, M. Martinussenand G. Bakken,.2009. "Intimacy Status, Attachment, Separation: Individuation Patterns, and Identity Status in Female University Students". *Journal of Social and Personal Relationships*, 26(5), 697-712.

Bales, K.L.and A.M. Perkeybile.2012. "Developmental Experiences and the Oxytocin Receptor System". *Hormones and Behavior*, 61(3), 313-319.

Beyers, W., and I. Seiffge-Krenke.2010. "Does Identity Precede Intimacy? Testing Erikson's Theory on Romantic Development in Emerging Adults of the 21st Century". *Journal of Adolescent Research*, 25(3), 387-415.

Blos, P. 1987."Freud and the Father Complex". *The Psychoanalytic Study of the Child*, 42, 425-441.

Bowlby, J. 1969. *Attachment and Loss: Volume 1 Attachment*. London: The Hogarth Press. Callaghan, T., H. Moll, H. Rakoczy, F. Wareneken, U. Liszkowski, et al. 2011. "Early Social Cognition in three Cultural Contexts".*Monographs of the Society for Research in Child Development*, Malden, MA: Wiley-Blackwell..

Callaghan, T., H. Moll, H. Rakoczy, F. Wareneken, U. Liszkowski, et al. 2011."Early Social Cognition in Three Cultural Contexts". *Monographs of the Society for Research in Child Development*.Malden, MA:Wiley-Blackwell.

Carter, C.S. 2014. "Oxytocin Pathways and the Evolution of Human Behavior". *Annual Review of Psychology*, 65, 17-39.

Chiao, J. Y., A.R. Hariri, T. Harada, Y. Mano, N. Sadato, T.B. Parrish and T. Iidaka. 2010. "Theory and Methods in Cultural Neuroscience". *Social Cognitive and Affective Neuroscience*, 5(2-3), 356-361.

Churchland, P.S.and P. Winkielman. 2012. "Modulating Social Behavior with Oxytocin: How does it Work?"What does it Mean?" *Hormones and Behavior*, 61(3), 392-399.

Collins, A.W. 2003. "More than Myth: The Developmental Significance of Romantic Relationships during Adolescence". *Journal of Research on Adolescence* 13(1), 1-24.

De Dreu, C. K. W. 2012. "Oxytocin Modulates Cooperation within and Competition between Groups: An Integrative Review and Research Agenda". *Hormones and Behavior*, 61(3), 419-428.

De Dreu, C.K.W., S. Shalvi, L.L. Greer, G.A. Van Kleef and M.J.J. Handgraaf. 2012. Oxytocin "Motivates Non-Cooperation in Intergroup Conflict to Protect Vulnerable In-Group Members". *PLoS ONE*, 7(11) 1-7.

Ditzen, B., B. Bradleyand C.M. Heim. 2012. "Oxytocin and Pair Bonding: On Possible Influences During the Life Course". *Biological Psychiatry*, 72(3), e3-e4.

Ebner, N.C., G.M. Maura, K. MacDonald, L. Westberg and H. Fischer. 2013. "Oxytocin and SocioemotionalAging: Current Knowledge and Future Trends". *Frontiers in Human Neuroscience*,7, 487.

Epstein, R., M. Pandit andM. Thakar, M. 2013."How Love Emerges in Arranged Marriages: Two Corss-Cultural Studies". *Journal of Comparative Family Studies*, 44(3) 341-360.

Erikson, E. 1950. *Childhood and Society* (Anniversary Ed., 1985) New York: W. W. Norton & Company.

Erikson, E. 1968. *Identity Youth and Crisis*. New York: W.W. Norton &Company.

Feldman, R. 2012."Oxytocin and Social Affiliation in Humans". *Hormones and Behavior*, 61(3) 380-391.

Feldman, R., I. Gordon, M. Influs, T. Gutbir, and R.P. Ebstein. 2013. "Parental Oxytocin and Early Caregiving Jointly Shape Children's Oxytocin Response and Social Reciprocity". *Neuropsychopharmacology*, 38(7), 1154-1162.

Ferri, S. L., and L.M. Flanagan-Cato. 2012. "Oxytocin and Dendrite Remodeling in the Hypothalamus". *Hormones and Behavior*, 61 (3) 251-258.

Fries, A. b. W., T.E. Ziegler, J.R. Kurian, S. Jacoris, and S.D. Pollack. 2005. "Early Experience in Humans is Associated with Changes in Neuropeptides Critical for Regulating Social Behavior". Proceedings of the National Academy of Sciences of the United States of America.102 (47) 17237-17240.

Habermas, J. 2002. *Knowledge and Human Interests*. (trans. J.J. Shapiro) Boston: Beacon Press.

Heidegger, M. 2010. *Being and Time*. (trans. J. Stambaugh) Albany: State University of New York Press.

Hollander, A.2013. "Social Inequalities in Mental Health and Mortality among Refugees and other Immigrants to Sweden: Epidemiological Studies of Register Data". *Global Health Action*, 6(1), 1-11.

Kakar, S. 1979. "Setting the Stage: The Traditional Hindu View and the Psychology of Erik H. Erikson". *Identity and Adulthood*. New Delhi: Oxford University Press, 2-12.

Kakar, S. 1994.*Encounters of the Psychological Kind: Freud, Jung, and India*.

Essays in Honor of George A De Vos.Hillsdale, N.J.: Analytic Press, 263- 272.

Keller, H. 2008."Attachment: Past and Present, but What about the Future?"*Integrative Psychological &Behavioral Science*, 42 (4), 406-415.

Keller, H., J. Borke, T. Staufenbiel, R.D. Yovsi, M. Abels, et al. 2009. Distal and Proximal Parenting as Alternative Parenting Strategies during Infants' Early Months of Life: A Cross Cultural Study. *International Journal of Behavioral Development*.33(5) 412-420.

Keller, H. and H. Otto. 2014."Epilogue: The Future of Attachment". *Different Faces of Attachment: Cultural Variations on a Universal Human Need*. New York: Cambridge University Press..

Kemmelmeier, M., E. Burnstein, K. Krumov, P. Genkova, C. Kanagawa, M.S. Hirshberg, K.A. Noels.2003. "Individualism, Collectivism, and Authoritarianism in Seven Societies".*Journal of Cross-Cultural Psychology*, 34(3), 304-322.

Kerpelman, J. L., J.F. Pittman, H. Saint-EloiCadely, F.J. Tuggle, M.K. Harrell-Levyand F.M. Adler-Baeder. 2012. "Identity and Intimacy during Adolescence: Connections among Identity Styles, Romantic Attachment and Identity Commitment". *Journal of Adolescence*, 35(6), 1427-1439.

Kim, H. S., D.K. Sherman, T. Mojaverian, J.Y. Sasaki, J. Park, E.M. Suh, S.E. Taylor. 2011. "Gene–Culture Interaction: Oxytocin Receptor Polymorphism (OXTR) and Emotion Regulation". *Social Psychological and Personality Science*, 2(6), 665-672.

Kim, H. S., D.K. Sherman, J.Y. Sasaki, J. Xu, T.Q. Chu, C. Ryu, S.E. Taylor. 2010. "Culture, Distress, and Oxytocin Receptor Polymorphism (OXTR) Interact to Influence Emotional Support Seeking". Proceedings of the National Academy of Sciences of the United States of America, 107(36), 15717-15721.

Kurtz, S. N. 1992.*All the Mothers are One: Hindu India and the Cultural Reshaping of Psychoanalysis*. New York: Columbia University Press.

Lee Raby, K., D. Cicchetti, E.A. Carlson, B. Egeland, and W. Andrew Collins. 2013. "Genetic Contributions to Continuity and Change in Attachment Security: A Prospective, Longitudinal Investigation from Infancy to Young Adulthood". *Journal of Child Psychology & Psychiatry*, 54(11), 1223-1230.

Mead, G.H. 1962. *Mind, Self, and Society: From the Standpoint of a Social Behavorist*. (C.W. Morris, Editor). Chicago: The University of Chicago Press.

Mesquita, A.R., I. Soares, G.I. Roisman, M. Van Ijzendoorn, M. Bakermans-Kranenburg, M. LuijkH. Tiemeierand J. Belsky. 2013. "Predicting Children's Attachment Behaviours from the Interaction between Oxytocin and Glucocorticoid Receptors Polymorphisms". *Psychiatry Research*, 210(3), 1322-1323.

Montgomery, M. J. 2005."Psychosocial Intimacy and Identity: From Early

Adolescence to Emerging Adulthood". *Journal of Adolescent Research*, 20(3), 346-374.

Ranade, N.V.2011. "Transition to Arranged Marriages among Asian-Indian Newly-Wed Couples in India and the U.S. "(Doctoral Dissertation). Retrieved from ProQuest Dissertations and Thesis.

Roland, A. 1982. "Toward a Psychoanalytical Psychology of Hierarchical Relationships in Hindu India". *Ethos*, 10(3), 232-253.

Roopnarine, J. L. and P. Suppal. 2003."Kakar'sPsychoanalytic Interpretation of Indian Childhood: The Need to Emphasize the Father and Multiple Caregivers in the Socialization Equation". *Childhood, Family, and Sociocultural Change in India: Reinterpreting the Inner World*. New York: Oxford University Press, 115-137.

Sandhya, S. 2009. "The Social Context of Marital Happiness in Urban Indian Couples: Interplay of Intimacy and Conflict". *Journal of Marital and Family Therapy*, 35(1), 74-96.

Sapru, S. 2006. "Parenting and Adolescent Identity: A Study of Indian Families in New Delhi and Geneva". *Journal of Adolescent Research*.21(5) 484-513.

Saraswathi, T.S. and M. Oke.2013. "Ecology of Adolescence in India". *Psychological Studies*, 58(4), 353-364.

Sasaki, J.Y., H.S. Kimand J. Xu. 2011. "Religion and Well-Being: The Moderating Role of Culture and the Oxytocin Receptor (OXTR) Gene". *Journal of Cross-Cultural Psychology*, 42(8), 1394-1405.

Sastry, J. 1999. "Household Structure, Satisfaction and Distress in India and the United States: A Comparative Cultural Examination". *Journal of Comparative Family Studies*. 30(1) 135-152.

Sawyer, S. M., P.S. Azzopardi, D. Wickremarathne and G.C. Patton.2018. "The Age of Adolescence". *Child and Adolescent Health*. 2(3), 223-228.

Seymour, S. 2013. "It Takes a Village to Raise a Child: Attachment Theory and Multiple Child Care in Alor, Indonesia, and in North India". *Attachment Reconsidered: Cultural Perspectives on a Western Theory*. New York: Palgrave Macmillan.

Sharma, S.L. 2012. "Globalisation and Social Transformation in India". *Inroads*. 1(2).

Steinburg, L. 2008. *Adolescence*. New York: McGraw Hill.

Stevenson, E. L., and H.K. Caldwell. 2012. "The Vasopressin 1b Receptor and the Neural Regulation of Social Behavior". *Hormones and Behavior*, 61(3), 277-282.

Tugendhat, E. 1986. *Self Consciousness and Self-Determination* (trans. P. Stern) Cambridge: The Massachusetts Institute of Technology Press.

Wade, M., T.J. Hoffmann, K. Wiggand J.M. Jenkins.2014. "Association between the Oxytocin Receptor (OXTR) Gene and Children's Social Cognition at 18 months". *Genes, Brain and Behavior*, 13(7), 603-610.

Walum, H., P. Lichtenstein, J.M. Neiderhiser, D. Reiss, J.M. Ganiban, E.L. Spotts, L. Westberg. 2012. "Variation in the Oxytocin Receptor Gene

Is Associated with Pair Bonding and Social Behavior". *Biological Psychiatry*, 71(5), 419-426.

Zimmer-gembeck, M. J., N. Hughes, M. Kelly, and J. Connolly.2012. "Intimacy, Identity and Status: Measuring Dating Goals in Late Adolescence and Emerging Adulthood". *Motivation and Emotion*, 36(3), 311-322.

Zink, C. F., and A. Meyer-Lindenberg.2012. "Human Neuroimaging of Oxytocin and Vasopressin in Social Cognition". *Hormones and Behavior*, 61(3), 400-409.