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## Review Article

## The preposterous human childhood – A longish sojourn

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## ABSTRACT

Human children are born immature, physically underdeveloped and continue childhood for longer duration than other earthly primates and mammals. Scientists posited that grant for time and energy to usher the brain development with complex sensory-motor neuronal functions culminated in long progression of growth in the young children of our ancestors that assisted in development of coping skills to adapt complex social functions, effective communication, and meeting environmental challenges. Role of evolutionary anthropology, altricial parenting, immature child birth being bi-pedalic, family oriented socialization and acculturation appear to have immense contribution in extension of human childhood long. Slow development in children is directly related to the emergence of human social and cultural complexity that a child needs to learn.

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## 1. Introduction

## 1.1. The preposterous human childhood – A longish sojourn

Growing up for a human child takes a long time; attaining adulthood secures double the period compared to other primates and mammals on this earth. Theorization entails that acquiring complex brain functions for social and societal responsibilities for survival and reproductive capabilities allow to build a bigger brain during the child stage – And that's what endure longer time.<sup>1</sup> After being born, a human neonate is helpless for a protracted duration for care-nurture-feeding-rearing from the mother. Humans are altricial, meaning the new born needing prolonged and significant parental care – as compared to common mammals giving birth to precocial calves that are independent of mothers during early infancy except for the feeding and nutrition. This is because of the fact

that at the time of birth, human head is small with even a smaller brain needing time to grow bigger and function better. This has been ascribed to maternal constraints of giving an early child birth with not so fully developed brain. Precocial new-borns are fit for survival purpose as they are able to move around and can protect themselves from environmental threats by running away from the scene as compared to the altricial young.<sup>2</sup> Since human babies live in family environment, social intelligence of the family also play important role and the stronger members protect the weak infant from the environmental threat, unlike the precocial mammals.<sup>3</sup>

## 2. Objective

Considering the natural phenomena of slow progression of early human life in the mindset, this work tries to delve in to the detail explanations for long childhood among human beings.

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### 2.1. *The life cycle*

A human baby when born, is only capable of feeding, crying, sleeping and excreting metabolic wastes; slowly learns to look into the surrounding, responding to calls, sounds and smile. Over a period of quarter of a year, the child gains physical strength, develops eye contact, reacts to social interface and engages self in to playing of its own. The neuro-motor functions improve further with passage of time and chronologically, the child learns to hold the head up, crawl, sit, stand and walk by the end of 18 to 20 months along with articulation of mono and bi-syllable words later.<sup>4</sup> Dependency for feed, rearing, looking after, caring and day-night accompaniment continue and are fulfilled by the parents or other family members. As a toddler, the baby walks around, plays with available toys, play-aids, pets and other children of the neighbouring families, happily discovers the surrounds and develops early socialisation before attending school. The physical, cognitive and emotional developments are tremendous till five years, the brain is most flexible and adjustable to adaptive learning; and as the brain matures, it is less capable of reorganizing and accommodating to unprecedented or unexpected challenges.<sup>5</sup> The first 5 years of a child's life is precious for brain development. The growing brain responds to the conditions it experiences – and these moments matter. Stimulating, joyful, interesting, and happy experiences can boost brain development and lay down the foundations for learning, socialization and cultururation.<sup>6</sup> Thereafter, the child steps in to the world of school, formal learning, friends, and tolerance of challenges from companions while at play, classroom, and even in the family sphere from the siblings enabling the child for skills and comprehension for planning, prioritizing, problem solving, and making good decisions. Ultimately from child to adolescent to adult – a long journey that gets finalized on attaining 18 years of age, a phase of versatility, creativity, ideation, innovation and even invention – literally a state of being useful for or easily adapted to various tasks, styles, and endeavour. The learning never ends – continues through out there after preparing an individual to accept life-long challenges that come-up subsequently like work, employment, earning, wages, marriage, family making, responsibility of parents and other members of the family. A long life thereafter may be till 70 years, require a well-trained brain with knowledge, skill, and attitude for resolving life oriented issues, problems and disputes during the early adult, middle age and elderly stage of life mostly concerning family upbringing, financial and health related matters. The scenario is diametrically opposite to any primates or mammals on this planet that makes a Homo Sapience so special and most precious hominine on this planet having superior intellect, brilliance, and intelligence.<sup>7</sup>

### 2.2. *Paleo-anthropology*

The fact that that the human children stay immature and physically underdeveloped for longer duration than other primates was observed since long. Most of the scientists postulated that allowance for time and energy to develop the brain with complex sensory-motor higher functions resulted in long progression of growth in the young children of our ancestors that assisted in development of skills to adapt to intricate social interfaces, meaningful communication, and environmental threats. The scientists scanned and analysed the teeth, specifically the permanent molars as it's preserved in the fossil with growth lines indicating the chronological age that may point towards the reasons for slow growth pattern in the ancestor child. Importantly enough, neurological along with physical growth and development in humans and primates often correlate with their dental growth rate.<sup>8</sup> It is also presumed that there was not much of difference in the growth rate of children of primitive humans and primates. By paleo-anthropological studies, it has been proved that the teeth of an Australopithecus afarensis child that lived 2.4 million years ago in Ethiopia, developed at the same rate as the chimpanzees of that era.<sup>9</sup> But around 1.2 million years ago, Homo antecessor (archaic human species) from Spain showed signs of slower development, longer than apes but shorter than our species – Homo sapiens.<sup>1</sup>

Growth lines in the molars of a child member of our genus Homo, who lived 1.77 million years ago was counted by modern technology by the fossil scientists that proposed a slow pattern of dental development. The child grew physically much faster than contemporary children of same age, but its molars grew as slowly as a modern human child during the first 5 years of life. This could be an evolutionary possibility for slow human child development slating for such long childhood in a group whose brains were not much larger than the prevailing primates.<sup>1</sup>

### 2.3. *Beneficial transformative evolution*

The average human squanders at least one quarter of the lifespan growing up from childhood to adult. This oddity appears squarely farcical considering the earthly animal kingdom including primates and mammals undoubtedly. In the careful biological calculus, no other primate has the differentials stretched this far but, then conspicuously, no anthropoid has been as efficacious as human beings dominating the planet and the space. Is the success of our superintelligence be the slowness in growing up to be the adult? What has been the possible metamorphic transformative benefit for delaying the adulthood – and may be – what may it specify for the final destination of our species?<sup>10</sup>

Undoubtedly our advanced conscious cognitive abilities like vocabulary, comprehending ability, responsiveness

and imagination are striking and inimitable. We Earthly species have merely acquired different adeptness and specializations. Becoming bipedal (upright ambulation) is the revolutionary advancement in the mortal biology that appears most promising compared to the primitive quadrupedal primates allowing the superior extremity set free for sophisticated, scholarly, and intellectual work; And importantly enough another habitual orthograde walker and runner do not known to exist.<sup>11</sup> Bipedalism resulted in tapering of hips to achieve a well-organized decent gait – an efficient stride on two legs; however, causing narrowing of the pelvic outlet (birth canal) compared to the quadrupedal predecessors – requiring our offsprings to be given birth early with physical and neurological immaturity creating the long path between birth and our first steps and even thereafter – compared to quadrupedal mammal cubs virtually hitting the ground running immediately post-birth.<sup>12</sup> Our dexterity and evolutionary advantage is our skill to solve problems and adapt to newer situations because of the long childhood making us to learn social and societal challenges comprehensively while being supported by the family.<sup>13</sup> This has been the cornerstone for our species to grow and dominate the planet and even venturing in to the space.

#### 2.4. Role of family

The child's brain is much more sensitive to experience in the first few years of life and that's rendered under the canopy of most protective family umbrella. Early life experiences establish sturdy foundation of mental faculty; more than millions of neural connections (synapses) are formed every second between the hierarchies of veritable neural functions during this period. Nurturing care for the child's mind is critical for brain growth. Neural pruning determine the synapses to endure and grow strong for the child's benefit. Safe – secure environment, tender – respectful handling, warmth – responsive care, physical and emotional support augment the brain growth optimally. Moving, being active, exploring around, loving relations, joyful interaction, parental bonding, and boosting stimulus from family relations improve functional output and higher sensory function including memory.<sup>14</sup> 90% of neuron growth occurs before 5 years of child's age in the context of neurogenesis, neuronal maturation, and neural synaptogenesis that are mostly aroused by the pre-school family level social stimulus and experiences. Responsive relationship meeting baby's interests and need is important. Close, loving, and satisfying warmth can built good psychomotor and emotional acumen that help to face challenge in later life. Needless to say, babies are born to learn and brain develops through repetitive, consistent and familiar experiences every day.<sup>15</sup> A baby born with an anatomically normal brain is ultimately reaped with the benefit of a well-developed mind and intellect due to re-

enforcement of 'socialization' and 'acculturation' in the ambience of family environment slowly taking its own time while stepping in to adulthood.

### 3. Conclusion

What's more, as humans, our cultures not only scaffold our evolution, but act as drills to open up newer avenues for biology to follow, and we find ourselves in a position where the long childhood our ancestors took millions of years to develop is being stretched yet further. In many societies, the markers of adulthood are increasingly stretched out – for the most privileged among us, formal education and financial dependence are making 30 – the new 20. Meanwhile, we are taking time away from the most desperate among us, placing that same education out of reach for those foolish enough to be born poor or the wrong colour or gender or in the wrong part of the world. A human child is a rather miraculous thing, representing a huge amount of targeted investment, from mating to matriculation. But given the gulfs in opportunity we are opening up between those have and have-not's, it would benefit us all to consider more closely the childhoods we are investing and prolonging, and who we are allowing to stay forever young.

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### 5. Conflict of Interest


None.

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