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# Editorial Perspective: What can we learn from hunter-gatherers about children's mental health? An evolutionary perspective

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## Introduction

Evolutionary anthropologists consider human ontogeny as unique among primates. Given that we lived as hunter-gatherers for more than 95% of our evolutionary history, studies conducted with the few remaining hunter-gatherer populations have shed light on the evolution of our distinct developmental schedule (next section). This research has great relevance to child psychiatrists and psychologists since it elucidates the developmental conditions humans may be psychologically adapted to, and how deviations from these conditions could impact children's mental health.

Here, we outline some key differences between the childhoods typical of WEIRD (Western Educated Industrialised Rich Democratic) populations and those of hunter-gatherer societies. It is not our intention to idealise hunter-gatherer childhoods; children living in such societies invariably face many difficulties that are not experienced in high-income populations, several of which are likely to be psychologically harmful. However, here we focus on *potential* 'evolutionary mismatches'—when an organism faces conditions that differ from those that some trait of the organism is adapted to, resulting in pathology or maladaptation.

The occurrence and severity of mismatches depend on the extent to which a trait is phenotypically plastic, i.e. has evolved to calibrate to prevailing conditions. Plasticity evolves to increase the likelihood of adaptive functioning when the optimal phenotype differs according to some social or environmental condition(s) that has exhibited sufficient variability over our evolutionary history; importantly, adaptive plastic responses are sometimes limited to the range of conditions that have been encountered in our species' past. Comparing hunter-gather and WEIRD childhoods may provide important clues about potential evolutionary mismatches by highlighting when WEIRD childrearing practices fall outside the general range of those practised by hunter-gatherers. Focused research is required to test whether such effects actually exist, and to evaluate the propositions below.

## The evolution of the unique human ontogeny

Hunter-gatherer children are weaned earlier, and start reproducing later, than all other great apes (Kramer, 2010). These features of ontogeny are considered fundamental to the evolutionary success of our species. Early weaning facilitated alloparenting—assistance in childrearing by caregivers other than the parents—which becomes increasingly practical as a child relies less on their mother's milk. This assistance increased the procreative capacity of mothers as they were able to shorten interbirth intervals and raise several dependent offspring simultaneously (Kramer, 2010). The late age at maturity evolved as it provided children with an extended period to learn complex foraging skills, which facilitated the acquisition of highly nutritious foods during adulthood (Kaplan, Hill, Lancaster, & Hurtado, 2000). Given these are core adaptations of our species, we suggest that child psychology may be adapted to: (a) the levels/type of care provided to hunter-gatherer young by multiple caregivers; (b) the learning methods of hunter-gatherer children.

Below we contrast these with childcare practices and education systems of WEIRD societies. Again, we would like to stress that our goal is to highlight *potential* mismatch effects that deserve investigation, rather than to assert that these effects necessarily exist. Nor are we implying hunter-gatherer practices are necessarily better; we are simply outlining aspects of childrearing where there is conceivable discordance between WEIRD conditions and those that children are evolutionarily adapted to. We draw upon NC's fieldwork with the Mbendjele BaYaka from Congo, and research of anthropologists studying other hunter-gatherer societies, including, but not limited to, the Aka from the Central African Republic; the Efe from the DRC; the !Kung from Botswana.

There is, of course, variation in the childhood experience across hunter-gatherer societies, just as there is among WEIRD societies. However, ethnographers have also pointed out many similarities among hunter-gatherers, including their systems of childcare and learning, since they exhibit notable consistencies when considered in contrast to WEIRD populations; as such, some anthropologists have

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referred to a 'hunter-gatherer childhood model' (Konner, 2005).

## Hunter-gatherer childcare

Hunter-gatherers live communally in camps of 25–70 individuals, thus babies are virtually never alone. Childcare is proximate, sensitive, and responsive; scholars vary in the emphasis they place on different components of sensitivity when defining the construct, here we describe hunter-gatherer caregiving as sensitive due to the provision of prompt child-centred responses to children's (distress) signals, which prioritise meeting their needs. Babies are held or carried using a sling for much of the day; breastfed on demand for 2–4 years; and co-sleep throughout childhood. Therefore, in comparison with WEIRD societies, levels of physical contact are exceptionally high. For instance, 10–20-week-old !Kung infants are in physical contact with someone for ~90% of daylight hours (Konner, 2005).

There is substantial evidence demonstrating positive psychological effects of physical, particularly skin-skin, contact for infants, which suggests that children (and mothers) have evolved to 'expect' it. It promotes secure attachment, whilst also providing indirect benefits to children mediated by reduced risk/severity of maternal depression (Norholt, 2020). Correspondingly, experimental studies indicate that both infant massage and babywearing—carrying infants in pouchlike devices, which resemble hunter-gatherer modes of carrying—benefit infant-mother attachment (Norholt, 2020).

Babies receive swift sensitive responses to their cries and are very rarely left to 'cry it out'. Among the !Kung, almost 100% of crying bouts are responded to, and the vast majority of these responses are comforting or nursing, whereas scolding responses are extremely rare (Kruger & Konner, 2010). Similarly, responsiveness is high among the Efe, and ~80% of crying bouts are responded to in under 10 s (Tronick, Morelli, & Winn, 1987).

Children in WEIRD societies live in much safer environments compared to their hunter-gatherer counterparts of whom ~40% die before the age of 15 (Kaplan et al., 2000). However, babies may be psychologically adapted to expect and solicit caregiving that increased the chance of survival in our evolutionary past. Being alone frequently or not receiving responses to one's crying may have been dangerous and symptomatic of neglect in ancestral societies. This may provide an ultimate evolutionary explanation for findings that an absence of cues indicating caregiver presence can be psychologically distressing for children in WEIRD societies, despite their objective safety. However, it is necessary to note that empirical studies of the effects of leaving children to cry it out have produced conflicting results, and this issue remains a point of contention. It is possible that babies have sufficiently sophisticated psychobiological mechanisms to discern the safety of their environment very early on. Whilst hunter-gatherer research is more consistent with studies showing the benefits of responsiveness, this debate can ultimately only be resolved via further direct empirical investigation.

Different attachment styles may be adaptive responses to caregiver behaviour. For example, the clinginess associated with resistant attachment may be an adaptive strategy to elicit greater consistency from ambivalent caregivers. If this is the case, the relevant caregiving behaviours that are associated with different adaptive attachment styles must have occurred in our species' past in order for these plastic responses to have evolved. However, given that the *average* hunter-gatherer infant experiences attentive and highly responsive caregiving, we expect that fewer infants need to be so active in soliciting increased responsiveness and care. Thus, we predict higher rates of resistant attachment (and most likely avoidant attachment) in WEIRD societies than in hunter-gatherer societies, although this has not been investigated so far. We are not suggesting that WEIRD parents are parenting insufficiently, but quite the opposite; they shoulder the responsibility of childrearing without the large support networks that have been so crucial throughout our evolutionary history.

## Multiple caregiving

Hunter-gatherer alloparents typically provide 40%–50% of a child's care (Kramer, 2010). A study with the Efe illustrates the upper end of the range of alloparental involvement in hunter-gatherer societies—by 18 weeks, infants have 14 alloparents a day; are passed between caregivers eight times an hour; and are in physical contact with an alloparent for 60% of daylight hours (Tronick et al., 1987).

In addition to the continuous physical contact and responsiveness facilitated by multiple caregiving, it can have several protective effects. The availability of other caregivers can lessen the harmful impact of psycho-social stressors within the nuclear family, and also reduces the risk of maternal depression, which has knock-on effects on child well-being and cognitive development. More extreme parenting difficulties increase the risk of neglect and abuse. Crying is often a catalyst to these damaging situations, perhaps in part because parents do not have the support in managing infant distress that has been typical over our species' past; for example, ! Kung alloparents respond to ~40% of long crying bouts (Kruger & Konner, 2010). Without such support, WEIRD parents may be more susceptible to emotional dysregulation if their child's crying is persistent, which increases the risk of harmful parental behaviour. That is not to say that child abuse and neglect are absent in hunter-gatherer

societies, both have been reported, but the risk factors are likely different.

Hunter-gatherer research has highlighted alloparenting as a core human adaptation. This directly contradicts 'intensive mothering' narratives, which suggest that it is natural for a mother to use her maternal instincts to manage the responsibility of caring for her children, primarily alone. Such narratives can lead to maternal exhaustion and have dangerous consequences. Instead, hunter-gatherer childrearing is entirely consistent with the recent consensus statement warning against limiting contact with other potential caregivers to safeguard attachment with the mother (Forslund et al., 2022). And, even setting aside these societal narratives about how children *should* be parented, it is self-evident that WEIRD caregiving of young children relies much more heavily on a very small number of caregivers, relative to what would have been the case during our evolutionary history. Such drastic differences seem likely to create the kind of mismatches that could adversely affect both caregivers and children.

There are two reasons why alloparenting is much more prevalent among hunter-gatherers than in WEIRD societies. The communal living results in a high ratio of available caregivers to infants/toddlers, often exceeding 10:1. This contrasts starkly with the nuclear family unit, and even more so with nursery settings, which according to Department of Education regulations require ratios of 1:3 or 1:4. Secondly, the switch from receiving care to providing it happens very early. From the age of four BaYaka children begin providing some childcare and are capable of sensitive caregiving (Salali et al., 2019); and it is common to see older, but still pre-adolescent, children looking after infants unsupervised. Conversely, the National Society for the Prevention of Cruelty to Children recommends parents arrange a babysitter, who is at least in their late teens when leaving pre-adolescent children at home.

These norms reduce the availability of support for parents and also preclude potential benefits to the socio-emotional development of young alloparents. It has been postulated that the evolutionary benefit of alloparenting to young caregivers is that they 'learn to mother'. In turn, they are capable of providing high-quality care to their future offspring, producing intergenerational benefits. This practice may also attenuate the low confidence of first-time mothers which can be a precursor to post-natal depression. We cannot assume such a system is practical in WEIRD contexts where children are busy with schooling and may have less opportunity to develop caregiving competence. However, if children can be trusted to care for infants in the dangerous environments inhabited by hunter-gatherers, we should at least give some consideration to this possibility.

## How hunter-gatherer children learn

The extended developmental period of humans evolved due to the substantial learning effort required to acquire the skills needed for hunter-gatherer subsistence. Teaching is rare, infants learn via observation and imitation, are allowed to explore freely, and caregivers rarely intervene. For example, BaYaka infants begin experimenting with machetes soon after they are able to walk, displaying proficiency by mid-childhood (https://player.vimeo.com/video/122919140?h=058ca62b9a credit: Gul Deniz Salali). Whilst this would be shocking in WEIRD societies, it may encourage the development of self-reliance. From around the age of two, hunter-gatherer children spend large portions of the day in mixed-age (2–16) 'playgroups' without adult supervision. There, they learn from one another, acquiring skills and knowledge collaboratively via play practice and exploration. For example, young BaYaka boys use vine harnesses to climb small trees, concurrently learning the techniques employed by adult men who climb 50-m high trees to forage for honey.

Fundamentally, among hunter-gatherers, learning and play are two sides of the same coin, which contrasts with the lesson-time/play-time dichotomy of WEIRD schooling. If children are in fact adapted to highly active and explorative learning, the associated psychobiological dispositions could potentially be a contributory factor to the incidence of ADHD. Indeed, several of the DSM-5 criteria for ADHD refer to disruption in schooling, and physical activity interventions have been shown to improve numerous executive functions among students with a diagnosis (Welsch et al., 2021).

Classroom schooling is often at odds with the modes of learning typical of human evolutionary history. It is passive and sedentary; teacher-led via instruction; separates children by age and ability; and involves high-pressure assessment that can precipitate mental health problems (Wuthrich, Jagiello, & Azzi, 2020). Foraging skills are very distinct from those required for integration into market economies, and classroom teaching is certainly necessary for the latter. Nevertheless, children may possess certain psychological learning adaptations that can be practically harnessed in some aspects of their schooling. Studies of peer and active learning suggest that, when they can be incorporated in WEIRD education, they improve motivation and performance, and can reduce stress (e.g. Balta, Michinov, Balyimez, & Ayaz, 2017).

## Conclusion

The developmental circumstances encountered by children in WEIRD societies are vastly different to those likely experienced for the majority of human evolutionary history. We have outlined several ways in which these differences might adversely impact

well-being; there are undoubtedly aspects of WEIRD childhoods that have psychological benefits, but the focus of this article is evolutionary mismatch. We are not suggesting that the hunter-gatherer approach to childrearing is perfectly compatible with WEIRD social and economic systems. However, there are numerous feasible changes with potentially large benefits that deserve further consideration and investigation.

The highly proximate, sensitive and responsive caregiving of hunter-gatherers aligns with attachment parenting rather than 'baby training' approaches in which the baby is expected to adjust to parenting behaviour. Infant massage and babywearing represent practical means of reducing the gap between hunter-gatherer and WEIRD levels of physical contact.

The exceptionally attentive childcare is facilitated by extensive alloparenting, which is relatively rare in WEIRD contexts, this can lead to parental exhaustion and depression with knock-on effects for offspring well-being. Childcare support should not solely be considered as a form of supervision required when parents are busy, but an opportunity to provide the conditions for children, and their parents, to thrive. More communal residences are becoming popular in WEIRD countries, and Germany plans to trial placing old age homes and nurseries adjacent to one another. Sibling involvement in caregiving could offer respite to their parents, whilst also benefitting their own socio-emotional development and confidence as caregivers.

The sensitive care received by hunter-gatherer children is complemented with substantial freedom to explore their environment. This 'first give them roots, then let them fly' approach may be conducive to the development of self-reliance and resilience. Finally, the high activity typical of hunter-gatherer learning is often considered dysfunctional in classroom environments; and subjects involving active learning, such as physical education and home economics, are now rarely offered. It is worth further exploring the possibility that incorporating some multi-age peer-peer active learning in schools could aid students with ADHD, and effectively harness human learning dispositions more generally.

Future research examining children's mental health in hunter-gatherer societies is required to test whether the hypothesised evolutionary mismatches actually exist, this should not be assumed. If this is the case, such insights could then be used to direct intervention trials in WEIRD societies accordingly. Thus, we encourage collaboration between evolutionary anthropologists and child psychiatrists/psychologists, which has great potential to advance our understanding of the conditions that children need to thrive.

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