

Raising Tomorrow (Seminar)

BaYaka Hunter-Gatherer Childhoods and Global
Perspectives on Child Development

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Deniz Salali (UCL) researches human behaviour and health using evolutionary approaches.

Deniz writes: “In this presentation, I will delve into the characteristics of hunter-gatherer childhoods, drawing on my fieldwork with BaYaka hunter-gatherers in the Congo rainforest over the last 10 years.

I will explore how BaYaka children acquire foraging skills and social norms, who takes care of them and how, and compare the physical activity levels of BaYaka children with those in the US and the UK.

Additionally, I will discuss future directions and the implications of these findings on Western childrearing practices.

I will highlight the methods employed by BaYaka to foster physically active and autonomous children, emphasizing hands-on learning opportunities, early engagement in infant care, extensive social networks, and concentrated caregiving networks.

Ultimately, I will argue that insights from hunter-gatherer childhoods can inform and inspire improvements in child development approaches in the West, proposing potential avenues for implementation.

<https://www.youtube.com/watch?v=sEgG-dv1DZ8>

Camilla: Good evening, everybody. Thank you very much for joining on Zoom, and thank you to the people who’ve made it here tonight and I hope we’ll have a few more stumbling through the RKO building in a minute.

Tonight, it’s a great pleasure to introduce Denise Solali, who has done many years of fieldwork with Bayaka Benjele.

Denise is an assistant professor of evolutionary anthropology here at UCL, using evolutionary approaches to understand health and human behaviour and her focus tonight is specifically on bayaka hunter-gatherer childhoods and what they may imply for global perspectives on child development and it was a recent article that she had co-authored with Choudhury.

Nicola Choudhury that really excited me with this study of of Bayaka children and I’m going to hand over to Denise now.

Deniz: Thank you, Camila, for inviting me to give a talk.

So I’m going to start with talking a bit about the Bayaka people.

So Bayaka live in the northern rainforests of Conga-Brazzaville and we visit a community called Imbanjele Bayaka hunter-gatherers and Imbanjele are a subgroup of Bayaka hunter-gatherers who reside throughout the Congo Basin area and they speak the language Imbanjele, hence the name and they live in these traditional huts and multiple families come together constituting a camp, and the camp size may vary between 10 to 60 individuals, and people move their camps depending on the food resources and

the main subsistence is through hunting wild animals and gathering, which includes fishing and honey collecting and that's why we call these communities hunters and gatherers, because their main subsistence is through hunting and gathering and there is an extensive food sharing, so traditionally meat that's brought into camp has to be shared with the other community members in the camp and there is division of flavors.

So we see women do most foraging, wild plants, and also fishing and men go hunting usually at night.

But their subsistence is not 100% from foraging.

So they engage in trade with neighboring farmer groups.

So women often collect wild plants, in the forest or here you see smoked fish collected and sold to bound to farmer traders and in return, people usually buy alcohol, cigarettes, or agricultural products.

In this case, a Bayaka woman is buying some glasses of palm oil from a bound to a farmer and there's really close interactions between farmers.

For example, this woman was at the time living in this forest camp with the Bayaka community and engaging in trade every day.

As I mentioned, people move the camps depending on the food resources.

So there are two seasons.

One is dry season and the other is rainy season and in dry season, people usually move in smaller family groups inside the forest and they make these beautiful camps inside the forest and they engage in mostly fishing, which is mainly a women's activity and in other seasons, mostly people prefer to move to their campsites that are located by these dirt roads that were opened by logging companies.

They prefer to live alongside the roads because they can engage in trade with farmers more easily.

So there is no political hierarchy in the community, and neither sex dominates each other and there is extensive care of children, communal breeding, as we say in evolutionary anthropology, which I'm going to talk in detail about today.

So I will first talk about who takes care of children in this community and how and then I would like to talk about how their childcare structure is intertwined with children's learning.

So I will talk a little bit about how Bayaka children learn, foraging skills and social norms and then we have some very recent results on physical activity levels in Bayaka children in comparison to children in the UK and the US.

So I would like to present some of these results and then finally, I would like to discuss with you all together some implications of what we learn about hunter-gatherer children or childhood, what can we infer to like Western child rearing.

So back in 2015, I was invited to a workshop organized by a developmental psychologist and Judy Messman.

Judy was interested in gathering video data from many different communities and looking at this video to analyze sensitive responsiveness across different cultures.

So sensitive responsiveness is a concept developed under attachment theory and basically it means how a caregiver respond to signal of an infant, whether they're able to recognize infant's signals like cries and promptly respond to that and how they respond to that and in developmental psychology literature there have been some debate about whether it's the Western concept that we don't see in other traditional cultures, this kind of sensitive responsiveness very much and Judy had this theory that actually it's the universal human trait that humans respond to infants' signals, but that's manifested in many different ways.

So in this paper, we argued that and we gathered lots of different videos from different communities and especially this video that I showed her, that she was really impressed with how a really young infant, as young as four year old, was able to respond to an infant's cry and I'm going to show you the video.

It's a very subtle interaction, but the baby is 13 months old and the child is actually his uncle.

So in these communities, because the generations overlap, usually you see aunts and uncles are children as well themselves.

But they...

As you will see in our results, they really contribute to child care and they're able to respond to infants' different signals from early ages.

So most of the results that I'm going to show you today, we did with Nikhil Chaudhary who is at Cambridge now.

So Nikhil, to delve deeper into how infants are looked after in this community, he did many detailed focal follow-ups.

So he observed a particular, an individual infant for 12 hours, very systematically.

So for example, every 30 seconds he would write down what's happening and then observe again and it's quite an intense data collection technique and he had, we had these focal follows of 18 infants who were under four years and we looked at first response to cry.

So here we had over 200 episodes of infant cry and we looked at the frequency of response methods.

So, and in the bar chart you will see The red bars are showing all children together, and then the green and the blue are age-divided children.

So the blue are showing children under 1 1/2 years, and green are showing children between 1 1/2 and four years.

So let's just focus on the red bars for simplicity now.

What we observed is when an infant cried.

On average, more than 50% of the time, the infant was comforted by being held and soothed and around 30% of the time, the infant was nursed and then that followed by stimulation, which means playing with the infant or localizing to the infant.

Attending to need means if the infant needed, if the infant was sick or dirty, that's kind of care and in no episodes we observed control over infants' cry.

So we didn't observe that people tried to shut infants crying down or told them not to cry and then we looked at the composition and contribution of people other than mothers to infant care.

So here you will see in the anthropology literature, perhaps some of, caregivers other than the mother are called *alla* mothers.

So we looked at how many all the mothers are there per child based on different care methods.

So for example, here you see how many all the mothers were per children who were within 3 meters of the child.

So that means they may not be necessarily giving really hands-on care, but they are still in close proximity to the child and for infants, we saw that on average there were 14 *alla* mothers present within 3 metres of an infant and of course, as the level of care increased, the numbers of *alla* mothers decreased.

So for example, Responders mean people who responded to the cry of an influence, so they provided more hands-on care.

Perhaps they soothed the baby, they hold the baby and when we looked at, for example, here, under 1 1/2 year olds, we saw that on average there were 3.3 caregivers other than the mother.

So I imagine you have a newborn infant and apart from you, there are three other people who are responding to the cry of the infant.

It's quite a good number, I think, when you look at Western standards of caregiving and then we also looked at all maternal contribution.

So Here we looked at how, other than the mother, how often an *alla* mother contributed to the care of an infant and again, we saw that almost 50% of the time an infant was looked after by someone who wasn't their mother and I'm sorry, this was for mother.

So almost 50% of the time the mother, and then around 40% of the time the *alla* mother, so someone other than the mother and around 8% of the time, both *alla* mothers and the mother responded to an infant.

So, okay, you may say, okay, we knew this, it takes a village to raise a child and I think this is quite interesting because we wanted to understand each *alla* mother's contribution, like in comparison to the other ones.

So here we looked at the percentage of contribution of each *alla* mother based on their rank.

So the first, a person who is ranked as First means that that's the person who contributed the most other than the mother and the 2nd is the 2nd and so on.

So what we observe is that especially for more closer care, like physical contact or close care domains, caring domains, there were few individuals who contributed to caregiving the most.

So here you see the most involved *alla* mother contributed more than 50% to an infant's caregiving.

So what this means is that yes, there is perhaps a big network of people who are potential caregivers, But among them, there are a few individuals who are really looking after the infant apart from the mother.

Okay, now you may be asking, who are these people? So we looked at how much they contributed, how much other people contributed other than the mother, but who are these mothers.

So to look at this, we used this wireless sensors devices.

So if you wear, if two people are wearing these devices, they're quite small devices that can be worn in the arm, on the arm and if two people are within close proximity to each other, for example, if they're within 3 meters to each other, then the other person, each other's IDs were recorded in the device.

So based on this data and also based on genealogical information that we gathered in the field, we can draw.

Is there anything?

Camilla: Mute on Zoom, please.

Yeah, it's muted.

Deniz: Sorry.

Thank you.

It's OK.

So with this data, we could draw social interaction networks.

For example, here you see a network of one of the camps that we visited.

Individuals are represented as nodes and people who are connected through biological kin, they are depicted with these red ties and then people who are connected through friendships, so unrelated people are depicted with blue ties.

So what you see in this is hunter-gatherer social networks resemble small world networks where you see tight communities, you can see them as households, and these households are connected through weaker ties to the other households.

Anyway, so we use that data to also understand who takes care of an infant and then, so let me first explain the pie chart.

Again, these are for 19 Bayaka children who are under four years and we looked at first aggregate involvement of people in each category.

So we were interested in how much unrelated people in a camp contributed to the care of an infant, how much the infant's father contributed, how much their grandmother or grandfather or uncle and aunt contributed.

Of course, again, these are aggregate involvement apart from the mom.

We are not talking about the mom here and interestingly, when you look at the total of each category, you see that siblings and unrelated people contribute to most to child care.

But when you look at adjusted involvement, which means how, on average, for each category, how much a person contributes to an infant's care.

You see, again, the sibling contributes the most, and then the further and you see an average unrelated individual contributes the least.

But the story here is that although each unrelated person in the camp They don't contribute as much, but in total, because there are so many unrelated people in the camp, in total, their total contribution is actually very substantial in childcare in this community and this, of course, has implications as well.

Like, for example, if a child loses their father, there are still other people, like a buffering mechanism for the child to survive and another quite different point than Western child rearing that we observed in this community is involvement of children in child care.

So in this plot, we looked at contribution of other mothers by life stage.

So what we mean by that, we looked at how much sub-adults, that mean children, contributed, how much reproductive age people contributed, how much post-reproductive age people contributed.

Of course, this also has implications for grandmother hypothesis and when we looked at it again, this is adjusted involvement of each individual within that category and we saw that children contributed the most to childcare in the community.

So this is actually, it's Just, I hope I can explain this well.

It may be a bit confusing.

So sub-adult first and a sub-adult average, right? Sub-adult first means the most involved child who contributes to a focal infant's childcare and sub-adult average means, on average, how much a child contributes to that infant.

child care.

Is it clear? So that means that there is actually one child who contributes substantially to an infant's care, which we actually observe in the field.

It's usually older sister, but like around 7, eight years, not adolescents.

That's my observation.

There are some in recent studies supporting that observation.

Okay, so I find it's really striking that children really contribute substantially to child care in these communities and this is not a pattern that we only observe in the Bayaka.

When we look at data from some other hunter-gatherer societies, we see the same trend.

So Alta hunter-gatherers from the Philippines.

We had direct data of in the paper.

Oh, by the way, we have this paper recently published on evolutionary human sciences, so you can go and have a look at it.

So the paper focuses on Alta and Bayaka hunter-gatherer children, but we also compiled some publicly available data for FA and Alka hunter-gatherers from Africa, and Hata in Tanzania and when you look at it, the contribution of sub-adults, the children, in infants' child care is in all societies, in all hunter-gatherers are above 50%.

So they contribute a lot to child care.

I know it's about unrelated individuals, not individually, but as a sound contributes a lot.

Okay, so one thing that this system allows children looking after children is First, while a child is looking after an infant, they are at the same time learning to parent.

Here you see a girl around 7, eight years carrying her younger sister.

I'm guessing the sister just started walking, so perhaps like 13, 15 months.

But at the same time, it's like a mutual learning process because while the girl is learning about parenting, the child is learning foraging skills with other children.

Here I want to show a video of this interaction a bit further.

So this is from a fishing trip of children.

Yes, this is a good example of imitative learning.

So children want, in this occasion, they want to do fishing by themselves.

It's A mixed-age child-only group and the girl was carrying the baby a bit, but then at some point, because it's quite a difficult terrain, it's swamp forest, it's really hard to walk and at the same time, they are doing quite physically challenging activities.

So at some point, she let the baby go, and the baby, of course, cried a bit.

But then she gave the baby one of the little pots.

So they do this, they kind of create a learning opportunity by providing these small tools to infants and then the infants started imitating other children and that's how they learn, which I'm going to talk.

further now that I think childcare and social learning is intertwined in these communities and one evidence for that is that we looked at who shared medicinal plant knowledge with whom by looking at dyadic similarity of medicinal plant users of people.

So for example, if I use a particular plant for the same reason, as my spouse, my partner, then we coded that as a shared knowledge.

So when we looked at this, I wanted to particularly focus on medicinal plant knowledge because it's a secretive knowledge in this community.

When we looked at it, we saw that apart from mothers and fathers, siblings and spouses shared medicinal plant knowledge very highly.

This is like the odds of two people sharing medicinal plant knowledge, and if the odds are higher than one, that means they have similar uses of medicinal plants.

So I think this shows that because there is a high sharing of medicinal plant knowledge, which involves health-related issues, I think this is most probably shared while providing childcare, and that's why you see lots of sharing between siblings and spouses as well.

Okay, I want to dive a bit deeper into the learning processes observed in how to get their childhoods.

But I don't know if you take questions or at the end.

What would you do at the end? At the end, okay.

yeah, that's fine.

So apologies if you've seen this video before because I've showed it in my other presentations as well.

But one of the striking we know that humans are very good imitators, right? But when you're observing how to gather children, you actually see the importance of imitative learning, especially for really young children, like as I showed in the previous video and here I'm going to show another infant imitating lots of skills that are necessary to survive in the forest and imitating those skills mainly by again looking at other children.

She's around 13 months and in the video you will see her following her aunt in this case who is again around 7-8 at that time.

Of course, they are not efficient yet, but over time, by practicing and imitating, they...

It gets really efficient.

This wouldn't happen.

Yeah, she wasn't injured.

last time in 2022 when I was in the field, she is now much older.

This was when I, it was, the video was from 2014, and she's now around 8, nine years and her parents were really proud of her saying that I met her parents, just, I didn't stay in their camp, but I met, and they were saying that she is really good at fishing and she's very efficient.

But that's how kind of they, Even such young ages from 7, 8, their instrumental skills are really impressive and so we looked at many videos like that from the field and one of my master's students and I coded these videos looking at that kind of learning episodes and coding them for different learning processes and we were interested in understanding how, with age, how children change which kind of learning processes they employ when they're equipped.

acquiring skills or information and what we saw is that for under fours, they mainly learn by imitating and observing others around them and of course, this includes lots of observing lots of children and there is now more and more literature coming, especially in these communities.

But in Western as well, if you have a child, you probably observe that they're more into learning from other children than the adults.

Like children often pay attention to other children rather than the adults and I think there is something within our evolutionary history that that's why that's like that and then in early childhood, from early childhood, now you see that children spend most of their time in playgroups and acquire skills mostly by, I say play practice, because it's very difficult to differentiate them actually in these communities.

Because as you saw in the fishing video, yeah, they're playing at the same time, but they're also practicing these important foraging skills and then when we look at teaching, which are the pink bars, we observe that learning through being taught doesn't happen so often, but it still happens.

But what we observed is that it's more reserved for skills that are not easily acquired by just observing people for more abstract information, perhaps more like social norms, which I'm going to talk about a bit.

So as I mentioned, after infancy, after four years, children usually are quite autonomous.

If you've been coming to talks here, I'm sure that many other anthropologists mentioned how autonomous hunter-gathered children are and what we mean by this, for example, when I was in the field last time, it was the fishing season and it's mainly women do go out to do fishing trips and most of the women in the camp went out and there were some children.

They are like usually younger than adolescents because adolescents either go with older women or they go by themselves.

So a bunch of children were in the camp and then all of a sudden I saw that they just gathered the small pots and machetes and they decided to go for their own fishing and it's incredible because it's really difficult terrain, as I said, and they are able to, already able to navigate in the forest, which is another topic I'm quite interested to do research in the future, how they learn and navigating because if I go by myself 5 minutes, I would be lost, basically.

Did they take any fish? Yes, they did.

So here, I have so many videos of fishing, but I didn't want to put everything.

But here, they're going, and then they're looking around, they're kind of exploring, and then they're exploiting.

So here, they use a technique called dam fishing.

They first make dams and then they take the water out so that there is not much water left and then the fish usually hides underneath the trees.

So they have to see, look at the fish nest.

So they put their arms into the mud and they see if there is any fish and when they do that, if there is fish, the fish come out and because there is not much water, then they can use their machetes to kill the fish that come out and here, this is the end of their fishing trip, where they are cleaning the fish that they collect.

Here is a girl.

So here is your answer.

They collect.

They actually gathered quite a lot of fish.

The only difference with adult fishing is the kind of fish that adult women get, they're like, they're really big, but as children, everything is smaller size, basically, in children's world and then, and then that's the autonomy I'm talking about.

They go back to the camp, there's still not much adults around, only perhaps some elderly people and they make their own fire and here again you see an older child is doing the things and then the younger children usually observing and they take their fish out and then they cook and they eat.

So they're actually able to if there's no adult around, they would still be able to survive at least for some days.

Okay, so I mentioned we observed some teaching and here I want to show you a video of a teenage boy, so this is meat sharing.

So the teenage boy hunted meat with a relative of his and then he brought the meat to the camp and everyone, especially children, gathered because they want to have their share and here that comes in a bit more instructions because the older women here, the adult women, she's kind of directing him.

But it's not like do this or that.

It's more like he's performing a skill and then she's kind of telling him, okay, do like you can adjust like this or you can share like that.

So this kind of teaching we observe in hunter-gatherers is more like reinforcement learning in machine learning where a child does some performance and then an adult or another child could be kind of gives feedback to their performance and then, of course, as I mentioned, children are not only learning these important skills, but at the same time they are contributing to the family economy, For example, you see children, it's like kind of children's task to fetch water, which they don't like so much.

I asked once, is there anything you don't like in the forest? And they usually say fetching water and they contribute by like catching small animals or foraging small fish and also, like as we mentioned, they contribute a lot to childcare.

How are we doing with that? Okay, not so much left.

So because of the lifestyle and the kind of learning, which is very different from formal education, of course you would expect that their physical activity levels are much higher compared to Western children.

But I wanted to really get some more quantitative data and measure and get a more detailed overview of physical activity in Bayaka children.

So we use these Fitbit-like devices in the field and we gathered, like in total, around 150 days of activity data of over 50 Bayaka children.

So from, I can't remember the age, I should know, from around 3 to 16 and my PhD student, Luke Kretschmer, who completed his thesis just a month ago, he looked at this data.

It's not an easy analysis.

It's really quite a lot of data to process and he also compiled some publicly available data sets from children in the UK and the US and we were able to, as much as we can, because the measurement units are not often the same or people use different kind of accelerometer devices, but as much as we can, we looked at the differences or similarities between all these children among these communities and here you see the physical activity, mean physical activity level change by age in Bayaka for boys and girls and this is data from children in the US.

I wouldn't compare the axis with each other, because their measurement units, as I mentioned, are different.

But just to look at the overall trend, what we see in Bayaka is with age, children's activity levels increase.

Whereas in the US, as you could predict, with age, children's activity levels decrease and we interpret this as the beginning of formal schooling.

So you can see the effect of schooling on activity levels quite well and then so for the UK sample, we only had data for teenagers and when we compared mean levels of physical activity of teenagers in the UK with the Bayaka, there is quite a striking difference.

So for the same age group, Bayaka teenagers are much more active than British teenagers.

So on average, Bayaka, regardless of age, this is the average sample, they have more than three hours of moderate to vigorous activity and this is their average is 70 minutes more than the adolescents in the UK.

Okay, I don't know.

We can interpret this and another interesting thing that came by looking at the data in more detail.

So for about 20 children, we had a more detailed data because we were able to give them the accelerometers for longer periods, for a week and that allowed us to look at daily variation in their activity levels and also hourly variation.

So again, when we compared the daily variation with daily variation of activity in American children, we observed that Bayaka children's activity, their activity varies more between different days.

So what that means is that it's actually, again, quite intuitive because especially for children in formal education, their activity, you wouldn't expect their activity levels to change from one day to another.

that drastically, whereas for hunter-gatherer children, from one day to another, for example, one day they may decide to go foraging, fishing in the forest, another day maybe they are less mobile.

Or one day when I was there, for example, some children went back to the camp that is by the dirt Rd.

which is quite distance, like it's four hour walk from where their camp in the forest was.

So, there's daily variation in their activity levels that's reflected in the data and this plot shows hourly variation for like average for each individual and as you see, this is the night time, people are sleeping and around 6 people's activity levels start rising and this hourly variation actually corresponds well with the time of the foraging trip.

So you see around 11 A.m.

the activity peaks, and there's another peak around 5 P.m., which to me it looks like this is when they're going to forest for foraging and then this is when they come from forest because that's when they do most walking in and out and in to the camp.

Yeah, we, if you're interested, we just submitted our paper as a preprint in bio archive.

Okay, so let me sum this.

We see When we look at Bayaka childhoods in general, we see there is responsive parenting, but this is allowed by, this is made possible by substantial non-maternal

care and we see that it takes a village to raise a child, but not everyone in the village contributes equally.

There are a few individuals who contribute most to caregiving other than the mom and among these people, we observed that siblings, children, and unrelated people in total contribute substantially to childcare and then childcare and learning is intertwined.

We observed that their learning is mostly autonomous learning.

So they learn mostly through imitating, observing, and playing and practicing and teaching, when it happens, it's mostly through feedback and their lifestyle and this kind of active learning also leads to higher physical activity levels and more varied physical activity levels in children and these have important implications.

So one is that People talk about attachment theory a lot and when people talk about attachment theory, they usually imagine attachment to mother or perhaps father.

But actually, when you look at these populations, you see that children can form secure attachments to not only mother and father, but other community members and that buffers If, for example, there is loss, maternal mortality is unfortunately high in these populations.

So that may be one mechanism that may buffer the effect of maternal loss, mother's loss in the, like, what happens after a mother dies to the children.

There is not much research on this, unfortunately, so I think that's there is a lot more to do.

Whether it's of course depends on perhaps how much investment another individual can give, depending on how much care they're already giving to other infants and then these These substantial child care networks also allow for ample social learning opportunities, especially from peers.

So more and more studies are showing how important children are in learning in acquisition of different skills and hunter-gatherer communities.

Shayna Levy recently and her colleagues wrote a review on this, and they are saying that adult-to-child teaching is taught as the main modes in Western societies, but it actually is not very common in other traditional societies when you look at it and then that kind of childcare structure also allows mothers to focus on other things.

So there is reduced maternal investment loads And there are good papers that came up that showed that very beautifully.

For example, a paper that came out last year showed that Bayaka girls, four to seven-year-olds, which is in line with my observations in the field, increase the foraging efficiency of nursing women during group expeditions because they are actually involved in caring of the small children and then in another study, researchers show that octo-child on the playgroups reduced maternal load because mothers don't need to look after the children all the time and what are the implications of this in our child-bearing? Because in the West, especially in these large-scale multicultural societies, it's often the mom that gets, that kind of looks after the infant in isolation and even we

introduce policies like longer maternity leave, it's not solving the problem because you still end up with one person trying to give all the care to an infant.

So then we observe postnatal depression in first-time mothers, and they are likely associated with lack of social support, but also I think lack of parenting knowledge because in these communities, children grow up with child care.

So they learn about parenting from very young ages.

But in our communities, because we don't have that kind of social structure, then especially a woman have their first children, it's quite a steep learning curve.

I know from myself.

Yeah, so that goes to future directions and kind of points I would like to discuss with you about today.

So one is continuing from my last point.

Last year around this time I had my first baby and being an evolutionary anthropologist I thought breastfeeding would be so easy because evolution must have sorted it out.

You know like of course like women have been doing that for thousands of years infants, babies must have some adaptation for breastfeeding.

They should have instinctive behavior to be able to nurse.

But then I realized that wasn't the case and breastfeeding is actually quite painful and very difficult and it's a learned behavior.

It is instinctive to an extent, but it's also learned.

So that's made me realize also being working with a hunter-gatherer community, how important is creating that kind of village and we have good examples in our society, like community groups or NGOs like Lalecha League, where they can provide free advice and information to new mothers.

But one thing that I realized through my experience is that there are too many opinions and there is lack of consensus on parenting advice, especially from healthcare workers.

I've seen so many midwives and healthcare advisors, healthcare visitors, and they all gave different advice, which was really confusing for me and surprising and I think one difference with communities like traditional communities like Bayaka, they already have established social norms on how to look after a baby and perhaps it may not be 100% the most effective way of looking after a baby, but probably it makes life easier for new mothers because people agree on how to raise a baby and my other The point, and my last point, is about how we can foster autonomous learning, and that's something I really want to work on in the future.

Because we need a major shift in our education systems, especially now with the rise of generative AI, the job market is really shifting and how can we, what can we learn from these communities about raising autonomous, independent individuals? And there are some points I think that we can consider.

One is hands-on learning through practice that I think our education system doesn't allow that much.

Not only maths, but day-to-day skills, like And also trying to have more reduced segregation of children and adult life.

So when people have children, they often, in the West, there is an understanding that you have to kind of tailor your activities towards children.

But in hunter-gatherer communities, you don't have that.

Children are immersed in adult life, and that's how they learn.

So how can we find ways that make this more possible, especially day-to-day skills like vacuum cleaning, like the kids can be involved in these processes and then how can we leverage the power of peers like we observe in hunter-gatherer communities? Of course, our family structures are very different now that we have much smaller families.

So when children come together, the peers are usually, they are not from family, and they may, especially in a community or in a place like London where there's lots of different cultural backgrounds, it may be more difficult to foster that kind of peer-to-peer interaction or kind of allow children to look after younger ones, but there may be ways So that's like how can we use the power of children to teach each other, right? And then based on these also, another point I'm considering at the moment, brainstorming with some interdisciplinary group of people, that how can we effectively incorporate AI in future curricula based on this and I think there are ways to incorporate AI so that it allows for more autonomous learning in education.

Thank you so much.

Audience questions

Audience member #1: In that chapter, with Nickel, you're saying that the PPG rates might be lower than together, but there was a paper published that found that on together women wasn't, I don't know if it was the hats or I can't remember the group, but they had like higher rates of PPG than Western countries.

Deniz: PPG, you mean?

Audience member #1: Sorry, post-natal depression.

Deniz: Oh.

Audience member #1: So, in that book chapter, the mismatch one, yeah, there's a paper link in that one that said that women in the altogether have,

Deniz: yeah, there, actually, yeah, so there is only one paper as far as, OK, sorry, so the question is...

We see there's a paper on hunter-gatherers that showed that postnatal depression occurs in the community as well and it's, I don't remember if it was higher or the same prevalence.

It's quite high prevalence.

So the question is why do we, why do we observe that in hunter-gatherer communities as well? especially given that they may be having lots of social support in childcare.

We didn't we didn't particularly observe postnatal depression, but at the moment we people like us and many other researchers who does field work, we are actually getting together and discussing ways we can observe and measure these mental health issues in the field.

But it's not as easy as it would seem because, in the West, people use usually scales and questionnaires, but you need to adopt that in these communities.

Or to me, the best way is to do kind of observational studies saying like kind of behavioral cues of depression.

So we are developing this method and Nikhil is actually really interested in this topic.

Audience member #1: That's what I'm applying to.

Deniz: OK, great.

You're applying to the postdoc or? Yeah, PhD.

PhD, OK, great.

Yeah, so we want to look at that and yeah, one of my interests is, for example, the experience of first-time mothers in these communities.

Because when I was in the field, and I wasn't paying so much attention, to be honest, to breastfeeding, because when you become a mom, you're focused sometimes, oh, you ask yourself questions like, oh, how did people do that? So you come up with new questions.

But one interesting aspect is understanding whether they experience similar levels of breastfeeding difficulties, because I think it's quite common in the West, or if because they practice from young ages.

Practice, I mean, we see teenage girls, for example, trying to soothe babies by putting them on their breasts, so they may be somehow more familiar with the sensation So these kind of studies are needed and we haven't conducted them yet, but it's a really good point and perhaps, I mean, I think mental health problems, you see, it's not only unique to Western cultures, but there are some structural differences, like differences in social structure and emphasis on social status that may amplify, we think, some of the prevalence of these Mental health issues in Western societies.

Audience member #1: Focused on inequality as the kind of mismatched variable, but the inequality is that you've seen much less than a year.

Deniz: Yeah, now I remember I met Nick a couple of weeks ago and he told me about the project.

Camilla: Yeah, OK.

Audience member #2: First, you mentioned maternal mortality is pretty high. Is that mortality in childbirth? Or just dying through any pieces at all.

Deniz: I think here most is maternity during child mortality during childbirth.

But I also know that before, even before childbirth, so I had a close friend in the field, a young woman, and just a month ago I was asking about her to my field assistant and they told me that she passed away and I couldn't believe, and I kind of had to ask so many other people to verify that it was her.

It was a shock to me because it wasn't her first baby neither, because you would guess that the first births are more difficult than the second and third births.

So I could speak with her brother in the end, and I tried to understand what happened and they were saying that she had a tooth, really swear toothache.

So I'm guessing that she probably had infection during pregnancy that caused that.

So yeah, deaths occur, like childbirth complications occur, but also I think during pregnancy complications happen as well.

But again, we don't have so much like data on this, unfortunately and also what happens to children when their mother die? Is it that the community that we see these care networks, do they allow for the survival of the child or is it that it's a difficult environment and it's also like challenging environment for a child's because there are so many parasitic infections as well.

So child mortality, especially in early years, is very high as well.

So what happens when mother dies? We don't, I think we need more studies on these issues.

Camilla: And did you do you have a question and repeat? Yeah.

Audience member #3: From A philosophical perspective, how do we wear perceptions of childhood? Challenge or complement Western notions of individualism and the global temptation in shaping.

Deniz: Okay, I need to rephrase this thing.

Audience member #3: How does the children's understanding of childhood complement or challenge Western notions of.

Deniz: You mean Bayaka children's or in general Bayaka people's concept of childhood?

Audience member #3: I guess if you could talk about the children's and what you gathered from, to the children understand compared to the adult family differences.

Deniz: Like their perception of childhood.

That's a very good question, but I'm not sure if I can answer that because...

Camilla: Can you search for the Zoom a little bit? Yeah, sorry.

Deniz: Yeah, so the question is whether The concept of childhood in Bayaka, how for themselves, I think how is different to the childhood that we consider in the West. Is that right? Yeah.

I mean, for that, I think I need to ask people more about like what they think childhood is, which is very interesting, I think, which I didn't do.

Yeah, it's kind of important, the Western definition of childhood in there.

Yeah.

But they have, they have like some differences in that are relevant to their lifestyle.

For example, I did some research on food taboos, so I asked people about 60 different foods from birds to antelopes to rodents to chicken if they eat and if they don't, why wouldn't they eat? And then there were some, I realized there were some animals, especially small animals like rodents, when I asked adults, they would laugh and they said, oh, it's children's eat that and then they would like laugh really hard.

So they have that kind of the childhood is perhaps in their imagination is again in the face some similarities that it's a time to practice and learn and usually, as I mentioned, children go for smaller animals or, when they forage, they use smaller objects.

So adults acknowledge that, these little birds, it's children's job to like hunt them or play with them.

We don't go near them they laugh.

That's kind of distinction.

That's the only thing I could like.

Camilla: But maybe, I mean, on the big picture, we're looking at that.

We're looking at children going off into the forest very confidently, looking after each other.

There's little kids with their machetes and we're all just going, oh my God, oh my God.

So from a Western perspective, the idea that children would be that unsupervised should let go free, go in the forest.

Yeah, is it's extraordinary looking at it.

Deniz: Exactly.

Camilla: Maybe that's what your question is thinking about, that this extraordinary degree of autonomy for the, but it's a collective autonomy where they're working together and we just hardly ever let children have that kind of space or responsibility.

Deniz: Yeah, definitely.

Yeah.

Perhaps next time I'm in the field, I can show some videos of how we interact with children and see like what they think.

They probably laugh at us.

Camilla: I play with those.

Yeah.

There's on Zoom, we've got a couple of, and I'm interested in this question from Eleanor, are you there or is it Ian? Do you want to say anything? Talking about the unrelated individuals, were any of those unrelated individuals actually classificatory kin in any sense? Were they fictive kin? Also, are there differences between maternal and paternal grandmother? Because I was looking at the grandmother contributions with interest, particularly the similarity with the Hadza and thinking about what that would mean.

Because the Agta grandmothers are very different, aren't they, compared to the Hadza and Bayaka?

Deniz: Yeah, in general, we saw both in Agta and Bayaka that grandmothers didn't contribute as much as like siblings or fathers and it's partly because they can be overlapping generations, so they may be having their own children and so they wouldn't perhaps contribute as much to...

Camilla: And that was Akta specific or...

Deniz: No, in both, I mean, there were slight differences in percentage of how much the grandmothers contribute in those two communities.

I can't...

Camilla: Remember it on top of my and about 10 for the Hadza and Bayaka in your figures.

Something like that.

Deniz: I can't remember on top of my.

Camilla: I mean, the Hadza grandmothers would be doing a lot of work that comes back to the children.

They're famous for their foraging, so they're doing It's not, it's care of another kind, isn't it? It's provisioning.

Deniz: You mean, yeah, provisioning.

I don't know.

Like, I think there's more researchers now kind of criticizing about grandmother hypothesis because we don't necessarily see that they contribute so much or as much as it was thought to be to childcare.

Camilla: Not specifically hands-on child care, but they may be doing other things.

Deniz: Yeah, that's right.

But in terms of provisioning food, we haven't looked at it in our study.

Camilla: So this work is more supporting Karen Kramer's evolutionary models of children looking after children and Karen Kramer's made these.

Deniz: Yeah, Karen, yeah, it's in line with, I mean, it's not contrasting, I wouldn't contrast their hypotheses, grandmother hypotheses, with Karen Kramer's emphasis on how children, how like life history, human life history evolved in a way that children were contributors to caring of infants, which actually facilitated women to have multiple.

Camilla: Children.

Yeah.

Deniz: Yeah.

Camilla: Yes.

You can see the other question.

Deniz: Yeah, there is a question I'm trying to understand.

When looking into unrelated individuals, is classificatory kinship taken into, you mean, you mean like fictive kinship? No, we didn't.

We only, we went very biological anthropology and we did like biological or a final kin, so people who are related through partnership ties.

Camilla: And any difference between maternal and paternal grandmothers?

Deniz: I think we did, yeah.

I can't, like I can't remember the figures on top of my head, but we must do.

Yeah, it's just in the paper.

We can have a look.

Camilla: But then in the.

The next question is quite something interesting.

Maria, do you want to say anything yourself if you're there or? She's talking about being herself an oldest child who was caregiver to a younger sibling but had suffered developmental trauma.

I'm wondering if there's been research on how this plays out for firstborn children later in life.

Deniz: Yeah, that's a very good question.

So we kind of look at it as like I almost presented everything as a very positive way that all of children contribute to childcare, but we don't talk too much or we haven't done much research on how it impacts these children's development.

For example, in that video, the older sibling who was carrying the infant on her back while foraging, Yes, it's like it facilitates mothers foraging, but at the same time it's a cost to this child themselves, right? So that's a very good question, which I think there is lots of opportunities to look at.

We haven't done it yet, but that was something That is something on my mind that I've been thinking about.

Audience member #4: I would like to speak on that just to say that to me as an oldest child who was very much responsible for the emotion and emotional care of my younger sibling and has gone on to not have children because of not wanting to have children in a way, in a situation that would require, but I do understand that we're living in a different society to the hunter-gatherer society, but I think that, I think my concern is how this kind of research could be used in a capitalist society to basically, justify children getting less care.

Deniz: You mean, sorry, we're trying to do some tech?

Camilla: Claire, come on the Zoom icon.

Deniz: There is some technical issue.

But yeah, I understood, like you were worried that the implications of this research.

Camilla: Can you take your finger out for us? OK, we've got it back.

Deniz: Cool.

People may misinterpret this research and the findings and use it.

Audience member #4: Sorry, without comparing, without analysing the effect it has on the older child later on in life.

how, the cost benefit is quite difficult or it could to me it would be irrelevant without seeing, without also taking that into consideration.

Deniz: No, I think you have a good point.

The only thing I'm thinking is that their, like their social structure and the norms about child care is very different to Western society.

So I don't know how much we can have, like in that sense, direct comparisons to, for example, if you're thinking more like mental health outcomes of like caregiving in such a young age, I'm not sure about that because it's I don't know.

It's such a common feature in their community.

Audience member #4: I suppose I'm trying to frame it.

I'm trying to see it.

My concerns is how it would be, like you said, misrepresented and yes, there's the physical aspect, which I'll be honest about.

I didn't even think about the physical aspect.

I was thinking purely about the mental health aspect.

But I imagine the physical one is probably just as important.

But for me, it's just, I mean, I'm fascinated by it and I actually feel like I've evolved as a very, as the kind of empathetic human being that we need more of and not less of.

But I am also, it's taken its toll on my mental health and the society we're living in.

does not make being an empathetic person very easy.

Do you see what I'm saying?

Camilla: Sorry, you can't, you guys can't hear this because I can't link it up to the speaker.

You heard it? Fantastic.

I can't link it to the speaker.

Deniz: Yeah, I totally understand your point and as I said, yeah, it's something I'm considering.

Camilla: There are some more questions about the actual, the relationship of the, lower reproductive success of children who are doing a lot of the caregiving and do they have any, is there a relationship between the caregiver children and the closeness to the most caring Alla mother or mother?

Deniz: I don't understand that you expect to see lower reproductive for the children who are caregiving.

I don't think so.

Yeah.

Camilla: So would we expect that?

Deniz: Because they're still, perhaps actually, I now have an idea why it's usually for like younger girls that we observe, if that's of course proven more with more research.

Because towards the adolescence, people are coming to their own reproductive stage, right? So they probably move towards more mating effort, whereas that's more early childhood is more for learning parenting skills.

So that's why I don't think that it would affect reproductive success later in life.

Did I do any kind of...

Audience member #5: Can I ask, can I just expand my question a bit? So not every children actually contributing like the caregiving the same amount.

Some children are more caregiver than others, even though they are the same age. Whereas on the adulthood level, we see more adults being an alma mater.

So It's very interesting that in children, some of them choose to learn this al mattering behavior more than the others.

So my second question, I can maybe summarize and link with that one as well.

That's how come some of these children in the population become small Yeah, how come they choose to learn this behavior more is because of their connection with all the mothers and mothers closeness.

Deniz: Okay, I don't think they're actively choosing, like some children are actively choosing to parents compared to others.

What's happening is actually, I haven't shown that figure, but you can see it in the paper.

So we also divided children's contribution by the level of relatedness to the focal infants and when you look at it, there is a within children, related children to the focal infant contributes more to childcare, which means that sibling is like, for example, if you have an older sibling, that older sibling is probably contributing to your care a lot.

Whereas some children may not have so many siblings or may not have any siblings, then their childcare is, their allah mother, their allah mother composition will be different to those who have an older sibling.

So in that sense, it's not like some children are choosing to parent and others don't.

Some children have younger siblings and so, and they are at the right age that they can look after and are asked perhaps sometimes to look after the influence.

I don't know if it's clear.

Audience member #5: Yeah, thank you very much.

Camilla: Any more questions in the room? Over here.

I was just wondering if...

Audience member #3: It seems like the children that have so much agency, there's like a defined cultural difference in between adulthood and childhood, like the teenagers that would have.

Camilla: Can we repeat for Zoom, because they wouldn't have heard.

Deniz: Okay, if, because children have a lot of agency, whether there is a defined...

Audience member #3: A defined cultural bounding between a child and a child.

Deniz: Defined cultural distinction.

between childhood and adulthood, especially like we saw in this adolescent stage in the West? That's a very good question.

Also, like I've been talking to colleagues about the stage of adolescence, that the kind of things that we associate with adolescence in the West, it doesn't really happen that much, we see in these communities.

But going back to your question, You mean from more like children's perspective, like children would be like, this is our thing, we don't want adults.

Audience member #3: So, you're saying it was like a mixed range of children all together, doing things together.

Is there like maybe in between defined adulthood or childhood group of like the community that grow together, even just that way?

Camilla: Teenagers as a group amongst themselves who are not with the children, not with the adults.

Deniz: Oh, I see.

Like, do they form distinct groups? It's not all the time like that, though.

Like, I, okay, I showed an example of fishing trip that was only children, but children also go with adults, with their mothers.

So with other women in the community, they follow sometimes in their fishing trip.

So it's not only always children spend time with children.

It's not like there are different times.

There are some days they accompany adults.

There are some days they would just be in child-only groups and actually there is a recent paper that came out by Hanil Yang and her colleagues, showing that women's cooperative foraging networks create opportunities for children to learn foraging skills because they take along children in these foraging trips.

Camilla: There's a question behind.

Do you want to?

Audience member #3: You said that you were wanting to try and sort of utilize the children teaching children here.

Camilla: Yeah.

Audience member #3: And I was wondering what sort, and you also mentioned AI.

I was wondering what sort of ways you're thinking about implementing that when you do seem to have like a very different lifestyle, which is there's lifestyles need to be a lot more, but the adults are, the children imitating adult behaviours.

They kind of lead into each other with just sort of like you're saying smaller to larger pitches kind of like sort of more complex of maybe.

but showing the same sort of behaviours where we may have actually quite a more distinct sort of difference in types of behaviours and think of the child-like behaviours and have other responsibility type behaviours, which they maybe seem to have more of a sort of a bleeding, whereas we might have a more of a slip.

When you're talking about being able to utilize children, teaching children, those children here might not necessarily have, they won't be doing the same skills that we would consider someone 30 year old, whereas the children there are doing the same skills that 30 year old are doing and I was just sort of wondering what ways your, because AI maybe sound like quite interesting words.

Deniz: Yeah, very good question.

Yeah, I will rephrase it.

So the question is how what ways, in which ways do I think we can kind of encourage that peer-to-peer teaching, especially considering that the kind of information or skills required for adult life in the West is quite different to the kind of skills required for

adult life in hunter-gatherer communities and there is a there's more distinction in the West and I totally agree with you that, for example, most of those skills, like foraging skills, are kind of instrumental skills.

So they can be learned through observation and imitation.

Whereas in our society at the moment, it's complex information kind of skills and knowledge, which may not be easily learned through just observing and imitating others.

But that's why I think I was thinking that AI maybe actually can be used to foster more autonomous learning in the sense that rather than like, how Western education at the moment is quite disciplinary that you like learn maths, physics, but there is not somehow much integration of these subjects.

Whereas we know that the future is changing, the job market is changing, and you have to have more interdisciplinary and skill-oriented knowledge.

So one way was to perhaps, of course this depends on the age of children, but to present them a real-life problem like climate change, like a problem that we are facing, and asking them, in peer groups to come up with different solutions and we can use AI in a sense that both within the peer groups, AI can help them generate new solutions and also the technologies now can help connect different peer groups together, which is, I think, an exciting future.

Of course, there are lots of considerations we need to think about and people talk a lot about using AI, but I think it could also be used in a good way and one example that I came across recently is Khan Academy, the online learning platform.

So it's one of the first online learning platforms that an entrepreneur in the States established and with the aim of providing education to people who cannot access education easily because it's on internet and now he's developing new tools to implement generative AI in the education, but that would help students not only find answers right away, but help them develop questions.

Anyway, this is I don't know if I answered your question, but there should be ways, and I think with some brainstorming with people from different disciplines, we can create better like future curricula for that's in line with what's happening in the world.

There's.

Audience member #3: A lot of things relating to learning from those situations.

They get put into a situation without necessarily being taught, not taught how to do something.

Deniz: Exactly.

Audience member #3: It's very work out through some examples, but so actually put into a situation to work something else.

Deniz: Yeah, exactly.

Like, yeah, he was saying, what's your name? Sorry, Hugo.

Hugo.

Hugo was saying that, we see in altogethers, they're put in situations and that's how they're learned.

So we can actually use that kind of learning strategy in Western education.

It's more like making it more situational based.

Camilla: Are we going to an end, or did you want to say something, Chris, or?

Audience member #2: No, my thing would go back to the whether there's a categorical distinction within adults.

Camilla: I mean, I had you want to ask?

Audience member #3: Just going back to that, what is the average age that people start like engaging in reproductive factions in these communities?

Deniz: Oh, Jerome would be good at it.

Camilla: She comes to ask Jerome last week.

Do you want to say to Zoom, what's this question? Go on.

Audience member #2: It's just that I appreciate that you're sort of.

But of course, if you come to the questions of like men's secret knowledge and women's secret knowledge and how you get initiated into that, and one way back or any other undergrad, there's quite a distinction of that, isn't there? I mean, in other.

Camilla: Words, being an initiative and vocal or a genuine.

Audience member #2: Kind of teaching, not and also it does introduce a fairly a very important distinction for being initiated as an adult, obviously in relationship to, reproduction and stuff.

I'm just wondering whether you'd answer that question we were asked earlier, is that kind of thing in mind about whether it was about that whether it's a blending thing between or whether it is some sort of distinction.

But I can, on the other hand, I was going to, I was going to refrain from asking that question on a bit that the social anthropologist or cultural anthropologist problem and that's really yours.

Deniz: No, but it's an interesting question.

Yeah.

So Chris was saying there is initiations of, and it's very sex specific.

So women have their own initiations and it's very secretive and men have their own initiations and that require like teaching and it's quite kind of distinction between perhaps an adult life and a children's life, which I didn't think about, but perhaps that's...

No, but I, looked at how they acquired that kind of social nurse because they children practice those rituals as well and that's why we kind of argued in that paper that teaching comes important than because you can't always learn this through just observing that someone is to kind of a bit give you like some knowledge, like pass the knowledge through.

Yeah.

Audience member #1: But what kind of starts the process of that initiation? Is it an age's reach or is it like woman's first inspiration or is it like the?

Audience member #3: Boy has to go? Is there like a, is it age specific or is it like culturally specific?

Deniz: Yeah, the question is what is there a specific age that children start these initiations? Like for example menstruation or is like a marker like menstruation for girls? I don't think so.

Like, when I was in the field, the initiation, the few times that I came across with, like, especially Ajangi, which is man's initiation, there were really, there was a really young boy who was initiated.

So I don't think it's actually like marking necessarily that, I don't know.

I'm actually not sure about this.

Camilla: Jerome, it's like.

Do the boy's relatives feel he's ready? And it can be quite individual.

It depends on individuals if they're mature enough to meet, because the gendy is a real ordeal to be initiated.

Yeah, he's not here.

I didn't see him.

Deniz: Yeah, sorry, I'm not 100% sure, but it seemed to be that there wasn't a specific age that they considered that there was a variation.

Audience member #2: With a girl, once she menstruates, then there's all sorts of questions she's got and all sorts of things which get involved.

Camilla: But it is possible to be initiated in Goku before menstruation as well, because Zinea got initiated in Goku quite early.

So it doesn't just go, but evidently learning about Aquila in relation to menstruation is part of that process for sure.

Deniz: Yeah, these are beyond my...

Camilla: It's not fair on you. I think we should say thank you to Denise because that was a beautifully wide-ranging and really provocative.

Deniz: Thank you for coming.

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