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Title: Hunter-gatherer children at school: A view from the Global South

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Abstract: Universal formal education is a major global development goal. Yet, hunter-gatherer communities have extremely low participation rates in formal schooling, even in comparison with other marginalized groups. Here, we review the existing literature to identify common challenges faced by hunter-gatherer children in formal education systems in the Global South. We find that hunter-gatherer children are often granted extensive personal autonomy, which is at odds with the authoritarian culture of school. Hunter-gatherer children face economic, infrastructural, social, cultural, and structural barriers which negatively affect their school participation. While schools are a risk to the transmission of hunter-gatherer values, languages, and traditional knowledge, they are also viewed by hunter-gatherer communities as a source of economic and cultural empowerment. These findings highlight the need for hunter-gatherer communities to decide for themselves the purpose school serves, and whether children should be compelled to attend.

Key Words: Educational marginalization, mobile communities, hunter-gatherers, universal education

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This paper focuses on the experiences that groups classified as hunter-gatherers have with formal education. The term ‘hunter-gatherer’ describes peoples who historically participated in a mobile subsistence strategy that involved harvesting wild foods through hunting, fishing, and gathering. Across the globe, such communities struggle more than most other minorities to successfully engage with formal education, even when they initially desire to do so. They experience lower attendance rates, and much higher withdrawal rates, than do neighboring groups. Formal education is a major global development goal, with a specific emphasis on providing education for all. Although there is a great deal of educational research on problems of inclusion, most research into minority or Indigenous education does not distinguish hunter-gatherers from other marginalized communities. In addition, although there is a substantial body of literature addressing Indigenous education in western settler states, far less is known regarding how hunter-gatherer communities in Latin America, Asia, and Africa experience formal education. Thus, the present paper aims to systematically and critically examine the common challenges that hunter-gatherer children confront in formal education systems in the Global South.

Hunter-gatherer lifeways

Historically, peoples classified as ‘hunter-gatherers’ are those living in mobile communities that subsist, at least in part, on hunting, gathering, fishing, and scavenging, in contrast to cultivation and the domestication of animals (Kelly 1995). The social and subsistence systems of modern hunter-gatherers have developed in different environmental, historical, political, and social conditions (Lee and Daly 1999). As a result, hunter-gatherers are highly diverse culturally and linguistically. Today, such communities engage in a variety of subsistence modes including wage labor, agriculture, small-scale herding, and state subsidies (Reyes-García and Pyhälä 2016). Yet many continue to identify themselves based on their active or historic participation in hunting and gathering activities, even when they have been forcibly settled, have lost access to their ancestral lands, or face ongoing discrimination in the encompassing society (Thompson 2016; Gilbert and Begbie-Clench 2018; Reyes-García and Pyhälä 2016; Hitchcock 2019). Even hunter-gatherer communities that have been settled still practice individual mobility in search of better employment or living opportunities, and maintain many of their social institutions and cultural values (Hays and Ninkova 2018; Lavi and Bird-David 2014). While we acknowledge that it glosses over localized beliefs, values, and practices, we use the term ‘hunter-gatherer’ throughout this paper in recognition of these shared experiences.

Ethnographers have noted that, despite their diversity, contemporary hunter-gatherers share many common cultural values. These include egalitarianism, with limited age-based hierarchy and formal leadership; widespread sharing, including of food, labor, space, childcare, and knowledge; and an emphasis on personal autonomy, with strong sanctions against interpersonal coercion (Endicott 2011; Gardner 2000; Gardner 1991; Gibson and Sillander 2011; Myers 1986; Woodburn 1982; B. S. Hewlett et al. 2011; N. Peterson 1993; Lavi and Friesem 2019; Lee 1979). In such social contexts, autonomy does not entail complete self-directedness and separation of single individuals from others. Instead, autonomy is embedded in relationships, mutual support, caring, cooperation, and socialization practices (Gibson and Sillander 2011; Endicott and Endicott 2008; Myers 1986).

Many societies classified as hunter-gatherer extend free choice and an absence of coercion to children and their learning processes (B. S. Hewlett and Lamb 2005; Terashima and Hewlett 2016; B. L. Hewlett and Hewlett 2012; Draper 1976; Draper 1978; Guenther 1999). Across cultures, hunter-gatherer children spend much of their day in multi-aged, mixed-gender

playgroups (Lew-Levy et al. 2017; Lew-Levy et al. 2018; Konner 2005; Konner 2016). During play, children emulate adult subsistence activities and social norms (Boyette 2019; Gosso, Morais, and Otta 2007; Davis, Crittenden, and Scalise Sugiyama 2021). Children are also encouraged to ‘pitch in’ to domestic, subsistence, and cultural activities, during which they learn alongside adults and peers (Lew-Levy et al. 2019; Gallois et al. 2015; Imamura and Akiyama 2016; Crittenden 2016; Boyette and Lew-Levy 2021). Stories—often told in the evenings—entertain while transmitting information about social and subsistence activities (Scalise Sugiyama 2011; Scalise Sugiyama 2017; Bieseke 1993; D. Smith et al. 2017). As the literature reviewed for this paper shows, the cultural values and socialization practices of hunter-gatherers contrast sharply with those from school.

Universal Education

Promoting universal education—usually understood as schooling—has been central to global development discourses since at least the World Conference on Education for All held in Jomtien, Thailand in 1990. The Sustainable Development Goals (UN General Assembly 2015) are the current global standard and provide benchmarks for development initiatives worldwide. The fourth goal of the Sustainable Development Goals is to “Ensure inclusive and quality education for all and promote lifelong learning.” The emphasis throughout the ten targets associated with this goal is on formal schooling, with the goal that “all girls and boys” will complete “free, equitable and quality primary and secondary education” by 2030. Education is associated with moral values; at the 2015 Oslo summit on Education, UN Secretary General Ban Ki-Moon pronounced education “essential to vision of a life of dignity for all”.¹ In addition to these lofty goals, education is also seen functional, and identified as “foundational” to meeting other development goals.

For marginalized groups, the focus of universal education initiatives is entirely on their inclusion within existing, school-based formal systems. Such inclusion is particularly challenging for mobile groups (Dyer 2016; Dyer 2013), including hunter-gatherers. Within this global discourse there is almost no recognition of local knowledge systems, nor of the fact that Indigenous children and their communities have in many parts of the world suffered enormously from (sometimes forced) participation in unsympathetic, often abusive, school systems (Sissons 2005). Often away from their families in boarding schools, children are taught foreign systems of knowledge, in a language other than their own, by teachers whose value systems often differ dramatically from those of the children’s home community. In many cases, descriptions of Indigenous children’s participation in schools closely resemble the definition of cultural genocide (Woodman 2019; Skutnabb-Kangas and Dunbar 2010). For hunter-gatherers, especially those in the Global South, these dynamics are current, and there is often considerable risk associated with participation in government schools.

The literature that we reviewed indicates that, despite these risks, many hunter-gatherer individuals and communities still desire to participate in formal education systems. Access, however, remains elusive. Current comprehensive and accurate statistics for the participation of hunter-gatherer children in formal schools are hard to obtain (Hays, Ninkova, and Dounias 2019). Because their communities are often very small, they are frequently lumped in with other ethnic and linguistic minority groups, sometimes rendering them statistically invisible. Even where counts are taken, measuring how many children are at school on any particular day does not reflect sporadic attendance and high drop-out rates (Hays, Ninkova, and Dounias 2019). Nonetheless, where statistics do exist, they tell a story of extremely low

¹ <https://www.un.org/sustainabledevelopment/blog/2015/07/education-essential-to-vision-of-a-life-of-dignity-for-all-says-ban-at-norway-summit/>

participation rates in formal schools, even in comparison with other marginalized groups (Thiem and Hays 2014). There are many different approaches to explaining why children from minority groups in general tend to perform less well in school, and drop out earlier, than children from dominant groups. In what follows, we outline some of the most common approaches, and how they are applied to hunter-gatherers.

Approaches to Indigenous and Minority Education

For much of the history of contact between hunter-gatherers and formal institutions, racist explanations which assumed that minority groups had lower cognitive abilities dominated the discourse; this approach is often referred to as *genetic deficit theory* (Kleinfeld 1973; Berry and Dasen 1974). Hunter-gatherers, often at the bottom of local social hierarchies, were in many places considered to be closer to animals than to humans, and not ‘educable’. Within academia, this perspective was largely replaced in the 1960s by the *cultural deficit model*. This model is closely associated with the ‘culture of poverty’ (O. Lewis 1966), which holds that the main reason for poor school performance by minorities is that their home culture does not allow them to develop the necessary skills, including vocabulary, basic literacy, reasoning, and other cognitive processes needed for school. While the cultural deficit model shifts the focus from innate intelligence to culture and home environment, it still places the blame for poor performance on students and communities themselves (Valencia 2012; Persell 1981).

In the later part of the 20th century, deficit models were challenged by linguists and anthropologists working with minority and Indigenous communities in the US (Labov 1970; Au 1980; Heath 1983; Phillips 1983) and beyond (Scribner and Cole 2013; Greenfield and Cocking 2014; Berry and Dasen 1974). The approaches advocated by these researchers focused on *cultural differences* between minority children and the school. For example, in many hunter-gatherer communities, individually putting oneself forward and claiming knowledge or skills is strongly discouraged, and children from these groups usually hesitate to volunteer answers in class. Teachers may interpret such reluctance to participate as disinterest or a lack of comprehension. Other researchers have emphasized the *structural barriers* faced by marginalized groups. These include racism, stigmatization, ‘urbanism’, unequal resource distribution, and other economic factors (Ogbu 1987).

Together, these four approaches shed light on why hunter-gatherer children engage with education at lower levels than dominant groups. While deficit models have been scientifically discredited, the view that hunter-gatherer children are inherently less intelligent (or even less human) accords with local discriminatory logics that still pervade the attitudes of many officials, administrators, and teachers. These pseudo-scientific explanations in turn become a part of the complex cultural and structural barriers that children face in the classroom. A central goal of the present paper is to identify these barriers.

The Present Study

In this review, we seek to highlight the common challenges that hunter-gatherers throughout the Global South experience in formal education institutions. Unlike the Global North, where education is generally ubiquitous, governments from most countries in Africa, Asia, and Latin America face serious challenges to implementing universal education (Grantham-McGregor et al. 2007). Problems relate to lack of funds, lack of infrastructure, complex ethno-linguistic dynamics, and inherited colonial educational systems, among other challenges (The World Bank 2017; E. R. Peterson et al. 2016). Many citizens of countries in these regions, especially minority groups and those living in rural areas, face barriers to

accessing formal education (Huisman and Smits 2009; UNESCO-PRIE 2007). In such contexts, hunter-gatherer communities, who are often among the most remote and marginalized, often face the greatest barriers. But, they are generally not a priority for governments struggling to provide access to education to their citizens.

Importantly, we do not approach universal participation in school as a desired outcome, nor do we view a lack of participation necessarily problematic. Instead, we focus on understanding the lived experiences of children and their families when encountering formal education institutions, and how these experiences shape children's engagement and disengagement with school. In doing so, we hope to disrupt the view that education can be universally delivered to equal effect for all. Our findings show that education is locally negotiated; children and parents assert their agency with regards to what ought to be learned and when, often reflecting tension between traditional skills and knowledge on the one hand, and access to new social and economic opportunities on the other.

Literature Search

We used a targeted approach to surveying the literature on hunter-gatherer children's experiences in schools in the Global South. We first developed a list of all articles and books known to us which were relevant to the goals of the review. These included articles in English, French, Spanish, and Portuguese. For each publication, we examined other reports published by the study's lead author and searched through each study's bibliography. We also searched through the electronic Human Relations Area Files² (eHRAF). eHRAF is an electronic collection of ethnographies for over 300 societies coded at the paragraph level using the Outline of Cultural Materials (Murdock et al. 2008). We focused our search on paragraphs including information on education (OCM 870) and narrowed our search results to focus on hunter-gatherers, defined by eHRAF as dependent "almost entirely (86% or more) on hunting, fishing, and gathering for subsistence." Any entries which discussed perception of, experiences, and learning in schools, were flagged and reviewed.

This search strategy yielded a total of 80 relevant publications from 23 countries (see Appendix). We then divided up the publications such that each author read articles matched to their research expertise and geographic focus. While reading, we noted (1) the study community, (2) the geographic area, (3) the year(s) of data collection, and (4) the study methods. We also summarized each study's main findings. This information was saved in a shared coding document. Once all reports had been coded and summarized, we each read through all the study summaries, and individually noted emerging themes. Through group discussion, these emerging themes were synthesized into a framework aimed at shedding light on cross-cultural similarities regarding hunter-gatherer children's experiences in schools.

Common Threads

Despite considerable diversity among hunter-gatherer groups in the Global South, we found several common elements that characterize their relationships with schools. Although some patterns, such as those associated with poverty or general cultural difference, are shared with other minorities, some specific characteristics exacerbate those, and set them apart from other marginalized groups. First, hunter-gatherer communities often prioritize different sets of values and learning goals than those set by schools, creating conflicting expectations for children. In particular, children are given considerable autonomy for self-directed learning at home. In many cases, the choice to attend school—or not—rests with them. Why do children

² <https://ehrafworldcultures.yale.edu/ehrafe/>

choose to attend school? How does the contrast between autonomy at home and obedience in the classroom shape children's experiences at school? Second, hunter-gatherer individuals and communities have differential access to formal education. What factors interfere with that access? Third, participation in school affects hunter-gatherer children and their communities. What changes occur because of participation in school? How does it affect local cultures and languages?

Although we treat these perspectives as distinct, it is important to note that these dynamics are interwoven. For example, an emphasis on personal autonomy, described in the next section, can present a cultural barrier to school participation, as children react negatively to the strict control of time and activities that school entails. This, in turn, can reinforce teachers' stereotypes of hunter-gatherer children as 'wild' or 'undisciplined', further exacerbating structural barriers. When children do participate in school, their behavior often changes to resemble more that which is expected of them—sacrificing at least some part of the autonomy that they previously enjoyed. The articles we reviewed reflect complex situations in which it is not easy to tease out a single 'barrier to' or 'effect of' formal schooling for hunter-gatherer children. Still, for the sake of clarity, we discuss these topics separately in what follows.

Childhood Autonomy

We highlight the emphasis on autonomy in hunter-gatherer communities because it is a central factor in determining their participation in school, and it is poorly understood by educators on the ground. This factor leads to a very different schooling experience from that of most other minority groups and underscores the need for a specific focus on hunter-gatherers when addressing school experiences. The most obvious impact of this autonomy is that it is generally children themselves who decide whether they will participate in schooling—or not. This is contrary to most mainstream societies, in which parents are expected to ensure that their children attend. This often baffles school officials who appeal to parents to encourage or force their children to go to school. Ultimately, however, as Ju|'hoan³ (San) parents told Hays, "it is the kids' decision." (Hays 2016a:68).

Hunter-gatherer children do often express a wish to participate in school, for a variety of reasons: they perceive the future benefits that formal education has to offer (Tshireletso 1997; Tshireletso 2001; Bombjaková 2018); they want to see and interact with their relatives and friends (Kamei 2001); they are excited about the novel experiences or material possessions associated with school (e.g. new foods via school lunches, school uniforms) (Turnbull 1983; Bombjaková 2018); or there is an interest in interacting with individuals from outside their communities, particularly non-Indigenous peoples (Tassinari and Cohn 2009; Alvares 2004; Lavi 2021). For example, among Xikrin (Ge of Central Brazil) school represents a safe place

³ The Ju|'hoansi are a hunter-gatherer community living today in both Namibia and Botswana (Ju|'hoansi is the plural form, and Ju|'hoan is singular and used as an adjective; the vertical line | represents a click sound, made with the tongue against the back of the upper teeth, similar to "tsk"). They belong to the broader category San, an exonym that encompasses several different linguistic groups, all of whom are former or current hunter-gatherers and who speak click languages. In this paper we use the local names (such as Ju|'hoansi) when the study is specific, and the term San when the author does not specify, or when more than one group are included.

for children to build relationships with non-Indigenous Brazilian knowledge and people (Cohn 2002).

Despite this initial motivation, however, children often struggle to mediate between their autonomous upbringing and the values promoted by educational institutions. For example, many hunter-gatherer children choose to participate in formal education sporadically and for a limited period, while simultaneously continuing to pursue ‘traditional’ livelihoods where possible (Tinoco 2007; Paksi 2019; Pollom et al. 2020; Strader 2015; Hays 2016a; Lopes da Silva Macedo 2017). Children may also simply choose not to go to school, preferring to stay at home to play (Morelli 2012; Strader 2015).

Autonomous behavior of children poses a challenge in schools, both because school authorities emphasize obedience and hierarchical stratification, and because everyday school routines are strictly regimented (Kakkoth 2014; Rival 2002). When denied the opportunity to make their own decisions—a common occurrence in education settings—children report experiencing a sense of powerlessness and fear, and may choose to leave school for good (Kakkoth 2014; Ketsitlile 2013; Ninkova 2017; Strader 2015; Shahu 2019). Children’s decisions about whether or not to attend school are generally respected by parents (Bombjaková 2018; Hays 2016b; Kakkoth 2014; Kamei 2001; Lavi 2019; le Roux 2000; Ninkova 2017; Strader 2015; Sanglir 2019; Shahu 2019). In fact, many parents do not force their children to attend school, despite continuous pressure from school authorities, governmental institutions, and welfare workers urging them to do so (Ninkova 2017; Lavi 2019; Hays 2016b).

Barriers to Schooling

Hunter-gatherer children face multiple barriers to participation in school. The financial cost of schooling itself, or its necessities, is often too high for families to meet; we describe such issues as economic barriers. Infrastructural barriers include the location and general conditions of schools. The dynamic interactions between teachers, parents, students, and school structures represent social barriers to children’s school attendance. Cultural barriers include differences between children’s cultural norms, values, or activities, and those associated with school. Finally, structural barriers are grounded in stereotypes about and stigma towards hunter-gatherer communities. These have developed over the historical processes of colonization, exploitation, or ongoing marginalization. We expand on these barriers in what follows.

Economic barriers

In some countries, the direct costs associated with attending school, such as user payments, school fees, and enrolment fees, are often too high for hunter-gatherer families (Kamei 2001; Kiema 2010; Kiema 2016; J. Lewis 2000; Ninkova 2017; Ngales and Astete 2020; Bombjaková 2018; le Roux 2000; Bieseke et al. 1989; Lee 1979; Sekere 2011; Hays 2016a; Thiem and Hays 2014). Even if entrance or hostel fees are waived, school materials, including supplies (pencils, notebooks), uniforms, shoes, and toiletries are required, and are often beyond the means of families (Thiem and Hays 2014; Ketsitlile 2013; le Roux 2000; Ninkova 2017; Tshireletso 1997; Pollom et al. 2020; Tshireletso 2001; Morsello and Ruiz-Mallén 2013). Furthermore, the waiving of fees can have other consequences; for example, Ninkova (2017) describes how, when fees are waived at rural schools in Namibia, Ju|’hoan parents are sometimes expected to work in return, or are labelled as “non-paying” and thus stigmatized.

Even if families can afford to send their children to school, or if school costs are subsidized, food scarcity can deter children from attending both day and boarding schools (Sekere 2011; Kiema 2016; Cwi and Hays 2011; Lee 1979; Ketsitlile 2013; Ngales and Astete 2020; Haraseb 2011). In many cases, families cannot afford to lose children's contributions to the household economy (J. Lewis 2000; Bock 2002; Sekere 2011). Similarly, learning school-based skills comes at the cost of other competencies often necessary for productive livelihoods in transitioning subsistence economies (Reyes-García et al. 2010; Hays 2016a).

Infrastructural barriers

One central barrier to children's school access is the incongruence between stationary schools and mobile hunter-gatherer lifestyles (Kamei 2001; Strader 2015; Kaare 1994; Kakkoth 2014; Sanglir 2019; Bombjaková 2018; Lee 1979; Haraseb 2011). For example, among the Hadza, opposition to school includes a "fear of losing the freedom assured in the hunting-gathering life" (Kaare 1994, 329). This has been the case for San communities for decades, for whom "life depended on mobility, a demand that stood in direct conflict with the school's requirement of regular attendance" (Lee 1979, 421).

Because schools are usually far from hunter-gatherer settlements, pupils and their families may move—either voluntarily, or by force—to villages with an available school (Gusinde 1931; Rival 2002; Kaare 1994; Tanaka 1987; Stearman 1987; Pandya 2005; Winkle Wagner 2006; Sanglir 2019; Tilkin Gallois 2000; Paladino 2010). Children may also travel to schools via buses (van den Boog, van Andel, and Bulkan 2017) or are picked up by government-sponsored vehicles (Pollom et al. 2020). Or, children may travel long distances to school by foot, sometimes in areas that are populated by wild animals or dangerous terrain or through territories occupied by other, sometimes hostile, groups (Desjardins 2016; Cwi and Hays 2011; Ngales and Astete 2020; Bock 2002). Ngales and Astete (2020), for example, describe how Filipino Dumagat students in Singawan swim across large rivers or walk for hours to get to school; not only is this dangerous but children often do not have enough food to sustain them for such a journey *and* a day at school.

In some places, schools have been established in remote locations (Strader 2015; Sercombe 2010; Aikman 2002; Ngales and Astete 2020; Hays 2016a; Cwi and Hays 2011; Davis et al. 2022; Biesele et al. 1989; Desjardins 2016). Because of the infrastructure needed to maintain them, even remote schools are still often located in slightly more populated areas, such as nearby farmer villages or in areas dominated by other ethnic groups (Kamei 2001; Paksi 2019). As a result, children are often afraid to attend school, for fear of discrimination or exploitation from these neighboring groups. The building infrastructure of remote schools is often poor, meaning that some schools cannot be in session during bad weather (Davis et al. 2022). Hays (2016a) describes how teachers in remote schools serving San communities in Namibia sometimes need to leave the village, but because of a lack of transportation it is often difficult for them to get back, and schools might be closed for long stretches—sometimes leading to tension between teachers, parents, or other school officials (see also Heinen 1988).

In many places, schools offer hostels where students can board during the academic year (Kaare 1994; Kamei 2001; Ketsitlile 2013; Ninkova 2017; Ninkova 2020; Hays 2011; Kiema 2016; Cwi and Hays 2011; Thiem and Hays 2014; Sanglir 2019; le Roux 2000; Pollom et al. 2020; Aikman 2002; Lavi 2019; Kakkoth 2014). Hostels are often disliked by hunter-gatherer families because they separate children from their parents and keep children from participating in subsistence and cultural activities and from ongoing social engagements

(Kaare 1994; Ketsitlile 2013; Ninkova 2017; Ninkova 2020; Hays 2016a; Cwi and Hays 2011; Thiem and Hays 2014; Sanglir 2019; le Roux 2000; Lee 1979). Several reports outline rampant emotional, physical, and sexual abuse experienced by San children inhabiting hostels in Botswana and Namibia (Mokibelo 2014; Ketsitlile 2013; Kiema 2016; Kiema 2010; Hays 2011; Hays 2016b; Ketsitlile 2011). In many cases, hostels are overcrowded (Ketsitlile 2013), lack necessities, and are poorly managed (Tshireletso 2001). Hostel staff often discriminate against boarders (Ninkova 2017). Mokibelo (2014) reports that 40% of San dropouts interviewed stated that they left school due to inhabitable hostel conditions.

Social barriers

Most school teachers come from dominant groups, not uncommonly from other regions of the country (Bombjaková 2018; Davis et al. 2022; Hays 2016a; Thiem and Hays 2014; Kakkoth 2014; Ketsitlile 2013; Kiema 2010; Kiema 2016; le Roux 2000; Lopes da Silva Macedo 2009; Ninkova 2017; Ninkova 2020; Paksi 2019; Sanglir 2019; Sercombe 2010; Tshireletso 1997; Tshireletso 2001; Stearman 1987; Tassinari 2001; Dos Santos 2006). The remoteness of schools and the common perception that hunter-gatherer children and their parents are difficult to work with often lead to a reported lack of motivation on the part of teachers; this is exacerbated by the fact that these teachers usually do not speak the local language(s) and have limited understanding of their students' sociocultural background (Hays 2016a; le Roux 2000; Ninkova 2020; Sercombe 2010; Kiema 2010; Ketsitlile 2011; Lopes da Silva Macedo 2023). These factors can lead to frequent absenteeism (Davis et al. 2022; Reyes-García et al. 2010; Pandya 2005). In many cases, hunter-gatherer children experience abuse at school from teachers, staff, and other students (Hays 2011; Hays 2016a; Thiem and Hays 2014; Ketsitlile 2013; Ketsitlile 2011; Kiema 2010; Kiema 2016; le Roux 2000; J. Lewis 2000; Mokibelo 2014; Ninkova 2017; Sekere 2011; Shahu 2019; Bieseke et al. 1989). Batwa students reported to J. Lewis (2000) that teachers tolerated, and sometimes condoned, student abuse.

The need for more teachers from the communities is widely acknowledged by local and national authorities and by community members (Hays 2016a; Cwi and Hays 2011; Ketsitlile 2013; le Roux 2000; Ninkova 2020; Ninkova 2017; Paksi 2019; Pamo 2011; Sanglir 2019; Wajāpi 2008; Desjardins 2016). The training and recruitment of local teachers, however, is challenging not only because of the limited number of educated individuals, but also because it threatens egalitarian social relationships. Hays (2016a), for example, describes how Ju|'hoan teachers in the Nyae Nyae Village Schools in Namibia face increased social pressure from other community members to share the limited resources they have acquired. To mitigate their perceived socioeconomic advancement, these teachers sometimes resort to withdrawal and absenteeism. Furthermore, local teachers' subsistence practices may also clash with the school calendar. Reyes-Garcia (2010) reports that Tsimane teachers in Bolivia discontinue classes when hunting or during the peak of the agricultural season.

Teachers' view of parents also structures children's school experiences. Because many parents themselves have not attended school, they are often unable to assist children with their schoolwork (Hays 2016a; Ngales and Astete 2020; le Roux 2000; Kakkoth 2014; Tshireletso 2001). As a result, many parents are viewed as "obstacles rather than partners in education" (Strader 2015, 13; see also Bombjaková 2018; Hays 2011; Hays 2016b; Kakkoth 2014; le Roux 2000; Mokibelo 2014; Ninkova 2017; Shahu 2019; Tshireletso 1997; Kiema 2016). Indian Nayaka parents are viewed by development and welfare agents as both responsible for their children's school attendance, and as a central obstacle to children's success at school (Lavi 2019; Kakkoth 2014). Even when education is free, many San parents are pressed to work for the school or buy school uniforms or schoolbooks. This practice is

seen by school administrators as a means to ‘teach’ parents to care about their children’s education (Ninkova 2017). In some cases, parents are purposefully excluded from school by governing bodies (Pamo 2011; le Roux 2000). A Namibian San man reflected on his distrust of the government as follows: “Why are we not allowed to say something, why are we not the ones in control? Others came from outside, we do not know them, they come and make a committee but why should we trust them?” (le Roux 2000, 53).

In some cases, parents actively resist sending their children because they view formal education as detrimental to cultural acquisition (le Roux 2000; Sanglir 2019; Shahu 2019), or because they fear for their child’s wellbeing in school (Kiema 2016; Ketsitlile 2013). In some cases, parents explicitly reject the ‘civilizing mission’ of school (Kiema 2016; Shahu; Kaare 1994; but see Rival 2002), or religious indoctrination (Desjardins 2016). For example, Shahu (2019) reports that the Raute in Nepal highly value their autonomy and forest lifestyles; the ‘foraging Raute’ reject schooling altogether, and even many of the ‘sedentarized Raute’ do not attend for very many years, choosing instead to return to their own communities.

Cultural barriers

Many authors report that children skip school to participate in gathering activities (Bombjaková 2018; Hays 2016a; Thiem and Hays 2014; Kamei 2001; J. Lewis 2000; Sekere 2011; Shahu 2019; Strader 2015; Pollom et al. 2020). Extended absences are often seasonal and involve gathering high value products such as clay or honey for the Batwa in East Africa (J. Lewis 2000) or medicinal plants, such as among San in Southern Africa (Hays 2016a). In other cases, children might leave to find food to eat, especially when there is not enough food at the school, or because they prefer the food from the bush (Shahu 2019). Sekere (2011) describes how, for resettled /Gui and //Gana (San) in Botswana, youth may choose to hunt when food is scarce at home—something they say they are more competent at than they are in school. In some cases, students must take time off school to participate in initiation rituals, such as the Hadza *epeme* ritual (Kaare 1994), or San menstruation ceremonies (Ninkova 2017; Sekere 2011; le Roux 2000). Marriage or childbirth may also be viewed as incompatible with schooling (Kakkoth 2014; Mokibelo 2014; Thiem and Hays 2014).

In cases where children choose to participate in subsistence or cultural activities, they are usually viewed by the school as absent. Children may be scolded or punished for being away from school, leading them to drop out altogether; they may also be turned away or viewed as dropouts after long absences (le Roux 2000; Hays 2016b; Thiem and Hays 2014; Shahu 2019). Even in educational efforts directly targeting hunter-gatherer communities and seeking to build upon their culture, such as for Congolese BaYaka (Bombjaková 2018), and for Namibian Ju|’hoansi (Hays 2016a; Cwi and Hays 2011), children accompanying their parents on gathering trips is seen as an obstacle to overcome, rather than a legitimate lifestyle to accommodate. An exception is noted by Kamei (2001): a ‘dry season vacation’ was started in 1998 to conform education to Baka culture and deal with absenteeism in the dry season.

In a majority of the surveyed texts, authors report that when hunter-gatherer languages are not used in schools, children often drop out because they do not understand, or have full command over, the language of instruction, especially at the beginning of schooling (Aikman 1998; Hays 2016a; Cwi and Hays 2011; Kamei 2001; Ketsitlile 2011; Kiema 2010; Kiema 2016; le Roux 2000; MacKenzie 2009; Mafela 2009; Mokibelo 2014; Morsello and Ruiz-Mallén 2013; Ninkova 2017; Ninkova 2020; Paksi 2019; Pamo 2011; Sanglir 2019; Sekere 2011; Sercombe 2010; Winkle Wagner 2006; van den Boog, van Andel, and Bulkan 2017; Katz and Chumpi Nantip 2014; Ngales and Astete 2020; Davids 2011; Haraseb 2011).

Hunter-gatherer languages are generally not incorporated into the school curriculum because there are too few speakers to make it economically feasible, because there is a lack of teachers from hunter-gatherer communities, and because school settings emphasize literacy while hunter-gatherer communication and knowledge transmission is largely oral (Ketsitlile 2011; Hays 2016a; Thiem and Hays 2014; Ninkova 2017; Aikman 1995; Davids 2011; Ngales and Astete 2020; Shahu 2019; Paksi 2019). Even in cases where hunter-gatherer languages have developed orthographies, the cost and challenges of training teachers or publishing of schoolbooks is not readily met by the government or existing donors (Davids 2011; Hays 2016a).

As noted above in the section on autonomy, there is a clash between the hierarchical environment of school, and the more egalitarian and autonomous relationships hunter-gatherer children experience at homes. Examples of the resulting cultural miscommunication abound in the literature (Aikman 1998; Bombjaková 2018; Hays 2016a; Hays 2016b; Kakkoth 2014; Kaare 1994; Lavi 2019; Lavi 2021; Morelli 2012; Rival 2002; Sanglir 2019; Sercombe 2010; Strader 2015; Ketsitlile 2013; Tshireletso 2001; Kiema 2016; Winkle Wagner 2006; Tassinari 2012). For example, Penan children in Malaysia are described as growing up in a non-hierarchical society with little recognition of formal authority or the need to greet and verbally express gratitude. Non-Penan teachers interpret these behaviors as the Penan's limited respect for them (Sercombe 2010). Likewise, Jul'hoan children are not accustomed to being verbally reprimanded, and can experience teachers' scolding as extremely harsh, or even as communicating that they should leave school (Hays 2016a). Furthermore, the use of corporal punishment is seldom used among hunter-gatherers but is frequently experienced in school, leading children to drop out of school (Bombjaková 2018; Davids 2011; Hays 2016b; Thiem and Hays 2014; Kakkoth 2014; Ketsitlile 2013; Kiema 2010; Kiema 2016; Lavi 2019; le Roux 2000; Mokibelo 2014; Morelli 2012; Sekere 2011; Shahu 2019; Winkle Wagner 2006; Lee 1979; Bieseke et al. 1989).

Structural Barriers

Hunter-gatherer children are often stigmatized and discriminated against by teachers and peers for coming from 'the bush' (Davids 2011; Kaare 1994; Kamei 2001; Ketsitlile 2013; Kiema 2010; le Roux 2000; J. Lewis 2000; Mokibelo 2014; Ninkova 2017; Ninkova 2020; Tshireletso 1997; Tshireletso 2001; Kiema 2016; Desjardins 2016; Ngales and Astete 2020; Winkle Wagner 2006; Haraseb 2011; Shahu 2019; Thiem and Hays 2014). The stigma might be focused on a particular aspect of their culture, such as eating wild foods (Cruz-Garcia and Howard 2013), having what they consider to be bad hygiene (Ninkova 2017), or may be a generalized stigma in which the hunter-gatherer children and their communities are not seen as full human beings (Ketsitlile 2013; Ninkova 2020; Kiema 2010). For example, Huaorani children are taught that intensive agriculture is a superior evolutionary stage than hunting, gathering, and horticulture (Rival 2002). According to San writer and activist Kiema (2010, 38), when students could not comprehend a question due to the existing linguistic barrier, teachers assaulted them verbally or physically: "You dogs, tell me the answer... you little Bushmen, stop sitting like rotten pumpkins, it's inhuman to keep quiet when asked a question." Even in cases when hunter-gatherer students may be proud of their 'bush' identity, the mistreatment associated with the discrimination is often cited as a reason for leaving school (Shahu 2019; Hays 2016a).

Impacts of Schooling

Schooling has potential and actual negative and positive long-term impacts on hunter-gatherer lifeways. Schools actively promote cultural values, socialization patterns, and learning styles that are at odds with the values of many of their hunter-gatherer students. Schools also contribute to loss of language and traditional knowledge. Schools can also be a productive setting for asserting human rights and gaining access to new social and economic opportunities. In what follows, we expand on these impacts.

Disrupting values

In contrast to the cultural value of autonomy, coercive obedience is a central aspect of schooling (Bombjaková 2018; Hays 2016b; Kakkoth 2014; le Roux 2000; Mokibelo 2014; Ninkova 2020; Rival 2002; Shahu 2019; Aikman 1995; Pandya 2005; Cohn 2002). According to Rival (2002) teachers of Huaorani children believe that without physical discipline, children cannot develop intellectually. Ninkova (2020) mentions that teachers of San children see the lack of punishment by parents as a lack of care and interest in their children, a principle teachers called ‘natural upbringing’. Kakkoth (2014) reports that among Indian Cholanayaka and Kattunayaka, children's life in schools and hostels are controlled and conditioned by rules and regulations that are in stark contrast to their life in the forest, where free choice and autonomy are central values.

These experiences with coercion and corporal punishment, in turn, can affect the behavior of children and parents (Ninkova 2020; le Roux 2000; Lavi 2019). Games initiated by South Indian Nayaka schoolchildren (e.g., playing ‘teacher’; giving orders, testing and correcting) display the assimilation of the new values acquired at schools, including those repressing personal autonomy (Lavi 2019). Through these games, children’s sense of self is altered, diminishing the value Nayaka place on personal autonomy and avoidance of coercing others. While for the most part, San children grow up with personal freedom and autonomy, some parents have started to use corporal punishment or verbal coercion with their children in order to get children used to it so that they stay in school (Ninkova 2020; le Roux 2000).

In contrast to the cultural value of egalitarianism, hierarchy and competitiveness define children’s daily lives in schools (Bombjaková 2018; Hays 2016b; Sercombe 2010; Kaare 1994; Thiem and Hays 2014). Sercombe (2010) shows that school’s authoritative and test-based culture goes against the values of the Penan in Brunei, who are non-hierarchical and do not value individual achievement. Bombjaková (2018) and Hays (2016a) likewise describe the learning atmosphere in schools for BaYaka and Ju’hoansi respectively as defined by boastfulness, competitiveness, and authoritarian rules. At home, children are socialized as egalitarian, adults rarely compare children’s abilities, and boasting about what you know is considered rude. As children adapt to these cultural requirements of school, changes in their behavior can lead to misunderstandings between children and their parents (Kiema 2010; Bieseke et al. 1989; Lee 1979; Ketsitlile 2011). For example, describing personal experiences in formal education in the Central Kalahari Game Reserve, Kiema (2010) argues that one objective of the school was to teach children ‘proper human behavior’. At home, children answered with “*yee!*” when called; at school, teachers saw this as an insult and physically punished them for saying it. Consequently, children began picking up Setswana mannerisms and values, which parents perceived as disrespectful.

Schools have contributed new social norms that undermine hunter-gatherer bodily and communicative practices (Mafela 2009; Sercombe 2010; Aikman 1995; Rival 2002; Katz and Chumpi Nantip 2014; Tassinari 2015). For example, Matses children adjust their postures and

movements to the classroom and small desks and chairs that constrain movements, inspire stillness, and position children to face, and pay attention to, the teacher (Morelli 2012). Schools bring in different speech registers and styles. San parents in Botswana and Namibia reported being afraid that schooling would cause children to become rude and disrespectful to their parents, as they had observed in their own community or others (Bieseke et al. 1989; Lee 1979; Kiema 2010). BaYaka gender-specific speech styles are not respected in school, and polyphonic singing is discouraged by the school because it is viewed as messy (Bombjaková 2018). This kind of discouragement can contribute to a feeling of shame and to the eventual loss of language and associated practices.

Disrupting language & knowledge

Because lessons are mostly taught in languages different from their mother tongue, schooling can lead to the loss of languages (Bombjaková 2018; Kiema 2010; Mafela 2009; Lopes da Silva Macedo 2009; Ninkova 2017; Sercombe 2010; Strader 2015; Tshireletso 2001; Davids 2011; le Roux 2000; Bériet et al. 2021). In a study of language shift among San speakers in Botswana, Mafela (2009) argues that formal education has a central role in the process of San language erosion, with only 10% of the San now speaking their mother tongues, mostly within the confinements of their homes and settlements. Additionally, Mafela argues that schools don't acknowledge the diversity of San languages and cultures, which impacts children's self-esteem and identity.

The separation of hunter-gatherer children from their siblings, parents, grandparents, and other community members for long stretches of time to attend school, especially boarding schools, may negatively affect the acquisition of traditional knowledge (Rival 2002; van den Boog, van Andel, and Bulkan 2017; Hays 2016a; Thiem and Hays 2014; Aikman 2002; Paksi 2019; Pollom et al. 2020; Shahu 2019; Siffredi 2017; Kent 1995; Winkle Wagner 2006). Paksi (2019) reports that Namibian Khwe parents were concerned that children were not spending enough time at home with their elders and imitating their practices; they report that participation in formal education significantly contributes to the erosion of Khwe traditional knowledge. Similarly, Kaare (1994) reports that myths, rituals, and folklore are central to Hadza cultural maintenance, the transmission of which is disrupted by schooling according to Hadza parents.

School curricula often do not reflect, or have little or no relevance to, the needs and lived realities of hunter-gatherers (Kiema 2010; Ninkova 2020; Sanglir 2019; Sercombe 2010; Shahu 2019; Aikman 2002; Hays 2016a; Pandya 2005; Tshireletso 1997; Heinen 1988; Thiem and Hays 2014). Even in communities that have been settled and have limited opportunities to practice traditional skills and activities, available jobs seldom require skills and knowledge gained in school (Kaare 1994; Ninkova 2017). In many cases, traditional bush knowledge may be lost or compromised, and the knowledge gained in schools does not meet local needs (Pandya 2005; Hays 2016a).

Enhancing human rights, economic & social experiences

Despite the many challenges discussed above, many hunter-gatherer parents want their children to gain at least some of the knowledge and skills taught in school (Aikman 2002; Lopes da Silva Macedo 2009; Hays 2011; Strader 2015; Bieseke et al. 1989; Rival 2002; Kakkoth 2014). In some places, parents emphasize the connection between school learning and claiming rights. For example, Lopes da Silva Macedo (2009) argues that Brazilian Wayãpi view schooling as necessary for acquiring the knowledge needed to defend their rights. Likewise, Strader (2015) reports that Baka parents view school as transmitting the

knowledge of reading, writing, and speaking French, which would enable children to defend their rights and interests, and participate in decision making processes. Hays (2011) emphasizes the role of education in relation to achieving rights, highlighting the right to both access state educational institutions, and to develop their own.

Parents also expressed an expectation that schooling will become a means for socioeconomic empowerment (Tshireletso 2001; Tshireletso 1997; Kiema 2016; Thiem and Hays 2014; Paksi 2019; le Roux 2000). Exploring San parent and student perceptions and aspirations to schooling in Botswana, Tshireletso (1997) reports that while most parents had never attended school, 96% of them saw education as an important opportunity which would give their children a better chance for a different future. Parents saw employment as the biggest benefit of schooling and hoped that their educated children would help them out of poverty. Likewise, the same paper reports that 100% of the interviewed students said that they liked school, and 50% believed that attending school would improve their lives.

School is viewed as an arena that facilitates and stimulates relations with other groups (Lopes da Silva Macedo 2009; Lavi 2021; Aikman 2002; Hays 2016a; Paksi 2019; le Roux 2000; Lopes da Silva Macedo 2016). Studying schooling through the 1990s among the Harakmbut in the Peruvian Amazon, Aikman (2002) showed that although they have questioned the quality of their education, Harakmbut welcomed formal primary and secondary schooling when those became available in the 1950s and the 1990s respectively, viewing these forms of education as providing access to new bodies of knowledge and sets of skills, such as learning Spanish, which they believe would help them develop skills needed in wider society. Schools for Wayãpi children create opportunities for unexpected meetings through which Wayãpi develop new codes of interaction (Lopes da Silva Macedo 2009). Nayaka parents encourage school attendance because they view it as an opportunity to form new relationships with ‘outside people’; they consider this to be more important than academic achievements (Lavi 2021).

In Latin American contexts in particular, intercultural and bilingual school curricula are interpreted by hunter-gathers as a way to reenforce social and cultural identity, as well as to valorize Indigenous languages (Santana and Cohn 2020; Tassinari 2001; Weber 2006; Collet 2010; Wajãpi 2008; Lopes da Silva Macedo 2016; Silva 2010; Souza 2001). The dialogical relationship between school-based and Indigenous knowledge and skills can also lead to the reinterpretation of school-based knowledge as part of shamanic and kinship patterns. For example, among Brazilian Maxakali and Wayãpi, writing is viewed as a political form of communication that resonates with shamanic forms of communication. The literacy skills learned at school are understood by these groups as a helping to ensure Indigenous existence in a world inhabited by spirits and Brazilians, with whom they must negotiate their place (Lopes da Silva Macedo 2006;2009; Alvares 2004; Viera 2010). Furthermore, in some communities, such as the Karipuna, non-Indigenous teachers are incorporated into Indigenous kinship networks, thus becoming relatives to Indigenous families (Tassinari 2001).

Summary

While societies classified as hunter-gatherers are highly diverse, many of the challenges associated with schooling are shared across continents. Our review of the literature found that the decision to attend school, or not, is often left to children, reflecting the cultural value of autonomy. While hunter-gatherer children are often enthusiastic about attending school, they do so on their own terms, often balancing their participation in community activities with

school attendance. This mode of engagement is not easily incorporated into highly regimented school structures.

We also identified several barriers to schooling. These include economic barriers, such as the financial cost of schooling and its necessities, and the loss of child participation in the household economy; infrastructural barriers, such as the incongruence between stationary schools and mobile communities, and dangerous hostel conditions; social barriers, including a lack of hunter-gatherer teachers and poor teacher-parent relationships; cultural barriers, including school calendars that collide with traditional activities, lack of mother-tongue instruction, and clashes between egalitarian social relations at home and hierarchical social relations at school; and structural barriers including stigma and discrimination from teachers and other students—which are often deeply connected to the other barriers described above.

Finally, we identified long-term impacts of schooling on hunter-gatherer lifeways. The hierarchy, competitiveness, and coercion experienced in the classroom erodes egalitarian social relations. Schools also promote new bodily and communicative practices, such as sitting still for long periods of time. Because mother-tongue education is rare, schooling can lead to language loss. The separation of children from parents for long stretches of time, particularly in the case of boarding schools, may limit opportunities for learning traditional knowledge. On the other hand, school can provide access to new skills that can help children assert their rights and access new economic opportunities. Under the right conditions, it can also reinforce social and cultural forms, contribute to language revitalization, and facilitate positive relationships with individuals from outside their communities. Identifying the factors that contribute to these positive results is an important focus of ongoing research.

Implications

Achieving universal basic education is among the main priorities of the global development community and national governments, especially in countries in the Global South. The global development discourse frames education as a tool for personal and societal development, especially with regards to impoverished or otherwise disadvantaged groups. Yet, research has shown that simply providing access to education does not straightforwardly lead to economic, social, and gender equality (Hanushek and Woessmann 2012; Asadullah, Savoia, and Sen 2020; Pappu 2020), and that historically embedded structural and cultural barriers play a critical role in the processes of continued educational exclusion and failure for many disadvantaged communities the world over (Evans and Mendez Acosta 2021; Rodríguez and Rodríguez 2019). This is particularly true for contemporary hunter-gatherers, who are usually extremely marginalized, and who sometimes face insurmountable barriers to attending school. Understanding the challenges surrounding educational participation is central to rethinking the role of school as a universal good, and to improving the delivery of relevant, appropriate, and accessible education to hunter-gatherer children.

Despite the striking similarities around the world, one of the conclusions of this review is that to reimagine education and adjust it to accommodate the needs of hunter-gatherer communities, we must distance ourselves from broad global solutions and focus on specific local needs. As highlighted throughout the text, differences in cultural values between the school and the home culture of hunter-gatherer children lead not only to misunderstandings, but also to alienation, violence and eventually, withdrawal from school. Some of the reviewed texts describe acts of physical, sexual, and psychological violence that children undergo in schools and hostels. Schooling not only affects children themselves. As is the case for other marginalized communities such as Haitian immigrants in the US (Doucet 2011) and

Pakistani and Bangladeshi communities in the UK (Crozier and Davies 2007), education policies often target hunter-gatherer parents, with the goal of engineering ‘better parenting’. Such interventions disenfranchise children from their parents even when at home. More broadly, formal education too often inflicts violence upon hunter-gatherer cultures, languages, epistemologies, and ontologies. These findings painfully echo historical Indigenous experiences in schools in Canada, the US, and Australia, where generations of children suffered immense violence and trauma at the hands of residential schools aimed to ‘civilize’ them (A. Smith 2010; Sissons 2005).

Our review highlights the need for individuals and communities to decide for themselves the purpose school serves, and how—if at all—children should be compelled to attend. Until stigma is reduced, and more economic opportunities associated with schooling are available, school attendance mostly does not fulfil its promise and does not represent a net benefit to many hunter-gatherers, calling into question whether universal education is indeed universally empowering. If international bodies really do aim to empower *all* via universal education, then culturally responsive education programs must ensure that they understand and respect hunter-gatherer cultures in school and outside of it. School calendars must be adjusted to accommodate foraging activities, specific initiation rituals, and other practices. This may also destigmatize these cultural practices and lift the burden of shame that some hunter-gatherer children have reported in school. Cultural sensitivity would also bridge the enormous gap between schools and families and will lead to a better understanding of communities’ own aspirations for empowerment and development. Currently, although school is usually portrayed within international development discourse and national governments as an empowerment tool, in effect, it curbs the autonomy and self-determination of hunter-gatherers. For education to fulfil its promise, hunter-gatherer communities’ needs, rights, and aspirations must form the core of the school curricula and mission.

One important way to empower hunter-gatherers is to put schools in their hands. A notable example is the Nyae Nyae Village Schools, started in the early 1990s as a private initiative to provide education for the Ju|’hoansi (Hays 2016b; Hays 2016a; Cwi and Hays 2011; le Roux 2000). Located in what is now the Nyae Nyae Conservancy in northeastern Namibia, the village schools were a collaborative project between the Ju|’hoan community and anthropologists, educationalists, and linguists. The main emphasis was on mother tongue education, the incorporation of local culture into the curriculum, establishing schools close to the community, and the training of local teachers and, importantly, on transitioning to the mainstream government schools in grade 4. In 2004, the village schools were taken over by the Namibian Ministry of Education and became government schools, though they continued to operate under its original principles. After almost thirty years in operation, the Village Schools are still functioning, and serve important purposes for the Nyae Nyae community. However, overall, they have not increased participation of Ju|’hoan children in the formal schools. Although this is often seen as a failure on the part of the project, it is important to note that the community does not see the problem as being with the schools themselves. In fact, a frequent and consistent request is for the schools to continue beyond grade 3 (Hays 2016a). The problem comes with the abrupt transition to mainstream government schools, where students face the numerous and intertwined economic, social, cultural, and structural challenges described in this review.

A similar example comes from the non-governmental organization Institut de Recherche et de Formation Indigène, which also started in the beginning of the 1990s as a collaborative project between Wayãpi communities, anthropologists, linguists, and educators. The project,

which centered mother tongue education and incorporating cultural knowledge and skills into the curriculum, was supported by the local and federal public educational authorities (Secretarias da educação e ministério da educação). The project successfully trained Indigenous teachers that have become, since 2006, responsible for the schools in the villages and for designing the Wayãpi school programs, pedagogy, and material. While these schools are officially recognized by the government as elementary public schools, Wayãpi communities still struggle to take ownership of Brazilian middle and high schools. To this end, Wayãpi school teachers have attended University graduate programs (licenciatura indígena) to become middle and high school teachers. Having Wayãpi teachers will help transform school curricula and practices, and overcome the gap between Wayãpi elementary schools and Brazilian middle and high schools (Lopes da Silva Macedo 2023; Lopes da Silva Macedo 2006; Tilkin Gallois 2000).

The Nyae Nyae and Wayãpi case studies not only illustrate the challenges that hunter-gatherers face in accessing education, but also provide some insight into possible ways forward and the challenges that this entails. Local approaches that prioritize local languages, knowledge, aspirations, and community control over the education are what is needed, and can work, but these do not always mesh well with mainstream formal education systems, as the Nyae Nyae case makes very clear.

Directions for Future Research

Our review points to several other areas for future research. Most broadly, despite our efforts to source and cite literature in Spanish, French, and Portuguese, our review was biased towards English language texts. Future comparative work aimed at investigating how different national agendas and colonial legacies affect hunter-gatherer children's experiences in school will require a multilingual team that can review doctoral dissertations, local journals, and governmental and non-governmental reports.

Furthermore, a large proportion of the studies reviewed here (33%, see Appendix) report on the educational experiences of the Kalahari San. This reflects a long history of anthropological research with San communities, including a special focus on children. Furthermore, there are more first-person accounts of experiences in schools by members of San communities themselves, partially because of the intense involvement of researchers and development workers in these areas who could facilitate the publishing process, and because some individuals have had higher levels of education and have themselves become involved with San education efforts. As a result, the history of schooling in the Kalahari, the experiences of San children in school, and the effect of these on culture change are more precisely documented. There are far fewer longitudinal studies investigating how the presence of school impacts hunter-gatherer cultures and lifeways in other societies. To better understand dynamics of culture change, future studies should answer these questions in partnership with diverse hunter-gatherer communities.

The research we have examined makes clear that hunter-gatherer children and communities are actively negotiating their educational participation. Yet very few of the studies outlined above reflect on children's own views about schooling (see Ninkova and Paksi 2021; Lavi 2019 for exception). Examining such questions will help elucidate the ways in which hunter-gatherer children assert their agencies in relation to formal schooling. Similarly, in most of the papers reviewed, schools are characterized as immutable institutions. This view overlooks the complex ways in which governments, administrators, teachers, parents, and pupils create school cultures on a day-to-day basis and over time. Studying how schools are incorporated

into, and shaped by, the communities they are meant to serve might highlight new aspects of this complex relationship.

Finally, the hunter-gatherer learning practices we have described at the beginning of the article—namely, self-directed learning, mixed age and gender groups, access to numerous ‘experts’ and hands-on learning—have recently started to receive attention in the literature on progressive pedagogy as central to human learning and potentially beneficial to education for all communities (Gray, 2011, 2015). In addition, broader social characteristics associated with hunter-gatherer groups, such as personal autonomy and a relative absence of coercion, have also been shown to facilitate effective learning (Ryan and Deci 2017). Given this, we would like to point out that insisting hunter-gatherer children must adapt to mainstream education (as it currently exists in most places) does not make sense from either a pedagogical or cultural evolutionary perspective. Such assimilative approaches not only create barriers to learning for hunter-gatherer children, but also ignore a valuable opportunity. Developing education systems that more closely match communities’ own effective values and approaches could help us to rethink the concept of schooling—and to develop approaches that could benefit all children. This is one area where researchers working together with hunter-gatherer communities could fruitfully contribute.

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Appendix. Table containing information regarding all texts surveyed as part of our review.

Lead Author (Year)	Country	Society	Field/Coverage Dates	Primary Methods
Africa				
Kamei (2001)	Cameroon	Baka	1997-1998	Observation; interview
Strader (2015)	Cameroon	Baka	2011-2012	Observation
Lewis (2000)	Rwanda	Batwa	1993, 1995, 1999	--
Turnbull (1983)	D.R. Congo	Mbuti	1970-1973	Observation
Bombjakova (2018)	Rep. of Congo	BaYaka	2013-2015	Observation; interview
Kaare (1994)	Tanzania	Hadza	1984	--
Pollom (2020)	Tanzania	Hadza	2017	Census; foraging returns
Bock (2002)	Botswana	Okavango Delta Peoples (Hambukushu, Dxeriku, Wayeyi, Xanekwe, Bugakwe)	1992, 1994	Observation, Demographic survey
Ketsitlile (2011)	Botswana	San (G/ui, G//ana)	2006-2007	Narrative inquiry; Observation; Interviews; Visual ethnography
Ketsitlile (2013)	Botswana	San	--	Literature review
Kiema (2010)	Botswana	San	1980s	Autobiography
Kiema (2016)	Botswana	San	1980s-2015	Autobiography
Lee (1979)	Botswana	San	1960s	Observation; interview
Mafela (2009)	Botswana	San	--	Secondary data
Mokibelo (2014)	Botswana	San	After 2006	Qualitative interviews
Tanaka (1987)	Botswana	San	1979-1984	Observation; interview
Tshireletso (1997)	Botswana	San	--	Observation; interviews; questionnaires
Tshireletso (2001)	Botswana	San	--	Interviews
Winkle Wagner (2006)	Botswana	San	2001	Case study analysis
Kent (1995)	Botswana	San	1987-1994	Interviews; observation
Bieseke (1989)	Botswana	San		Case study analysis
Sekere (2011)	Botswana	San	2008	Surveys; autobiography
le Roux (2000)	Namibia, Botswana, South Africa	San	1997-1999	Surveys; Professional experience
Davids (2011)	Namibia	San	1990s -2010	Professional experience
Haraseb (2011)	Namibia	San	2000s	Professional experience; autobiography
Thiem (2014)	Namibia	San	2011-2012	Participatory methods; survey
Hays (2011)	Botswana, Namibia	San	1998-2009	Observation; interview

Hays (2016b)	Namibia	San (Ju/hoansi)	1998-2015	Observation; interviews
Hays (2016a)	Namibia	San (Ju/hoansi)	1993-2015	Observation; interviews; document research
Ninkova (2017)	Namibia	San (Ju 'hoansi)	2008-2015	Observation; interviews
Ninkova (2020)	Namibia	San (Ju 'hoansi)	2008 - 2018	Observation; interviews
Cwi (2011)	Namibia	San (Ju/hoansi)	1990s, 2000s	Professional experience; observation; interviews
Paksi (2019)	Namibia	San (Kwe)	2016-2018	Observation; interviews
Pamo (2011)	South Africa	San (!Xu, Khwe)	2000s	Activist recommendations
Asia				
Lavi (2019)	India	Nayaka	2010-2014	Observation; interviews
Lavi (2021)	India	Nayaka	2010-2014	Observation; interviews
Pandya (2005)	India	Ongee, other Andamanese communities		Observation; interviews
Cruz-Garcia (2013)	India	Paniya, Kurumba	2004	Interviews; photo identification
Kakkoth (2014)	India	Cholanayaka, Kattunayaka	2006-2011	Observation; interviews
MacKenzie (2009)	India	"Tribal" communities in Andhra Pradesh and Orissa	--	--
Desjardins (2016)	Indonesia	Mentawai, Tau Ta'a Wana, Orang Rimba	1990s-2010	Professional experience
Sercombe (2010)	Brunei	Penan	1992-2002, 2005, 2007	Observation
Shahu (2019)	Nepal	Raute	2011	Observation; interviews
Ngales (2020)	Philippines	Agta, Ayta, Batak, Dumagat	2012-2014	Case study analysis; collaborative research
Sanglir (2019)	Thailand	Moken	2017-2019	Observation; interviews
Latin America				
Gusinde (1931)	Argentina	Ona	1919-1923	Historical accounts; observation; interview
Siffredi (2017)	Argentina, Paraguay, Bolivia	Chorote	1901-1994	Culture summary
Morsello (2013)	Brazil	A'Ukre Kayapó, Araweté, Asuruni from Xingu	2005	Household interviews
Collet (2010)	Brazil	Bakairi	2010	Observation; interviews
Dos Santos (2006)	Brazil	Baniwa	2005	Observation; interviews; professional experience
Weber (2006)	Brazil	Huni Kuin (Kaxinawá)	2006	Observation; interviews
Tassinari (2001)	Brazil	Karipuna	1996-2001	Observation; interviews
Tassinari (2009)	Brazil	Karipuna, Mbengokre-Xicrin	2009	Observation; interviews
Tassinari (2012)	Brazil	Karipuna	2010	Observation; interviews
Tassinari (2015)	Brazil	Galibi-Marworno	2010-11	Observation; interviews

Alvarez (2004)	Brazil	Maxakali	2004	Observation; interviews
Souza (2001)	Brazil	Pataxó	2001	Observation; interviews
Paladino (2010)	Brazil	Tikuna	2010	Observation; interviews
Santana (2020)	Brazil	Tubinambá	2016	Observation; interviews
Silva (2010)	Brazil	Xerente	2010	Observation; interviews
Cohn (2002)	Brazil	Xikrin	2002	Observation; interviews
Tillkin Gallois (2000)	Brazil	Wayãpi	2000	Observation; interviews; professional experience
Wajãpi (2008)	Brazil	Wayãpi	2008	Observation; interviews; professional experience
Lopes da Silva Macedo (2009)	Brazil	Wayãpi	2004	Observation; interviews
Lopes da Silva Macedo (2017)	Brazil	Wayãpi	2002-2017	Observation; interviews
Tinoco (2007)	Brazil	Wayãpi	1996-2004	Observation; interviews
Lopes da Silva Macedo (2016)	Brazil, French Guyane	Wayãpi	2000-2005	Observation; interviews
Lopes da Silva Macedo (2023)	Brazil, French Guyane	Wayãpi	2020	Observation; interviews
Bériet (2021)	French Guyane	Wayãpi	2020	Observation; interviews
Davis (2022)	Bolivia	Tsimane	2006-2011	Interviews; experiments
Reyes-Garcia (2010)	Bolivia	Tsimane	2003,2005, 2006	Interviews; experiments
Stearman (1987)	Bolivia	Sirionó	1973-1984	Ethnographic restudy; Observation
Rival (2002)	Ecuador	Huaorani	1989-1991	Observation
Katz (2014)	Ecuador	Shuar	2010-2011	Interviews
Aikman (1995)	Peru	Haramkbut	1980-1990s	Observation; interviews
Aikman (1998)	Peru	Haramkbut	1980-1990s	observations and interviews
Aikman (2002)	Peru	Haramkbut	1980-1990s	Observation; interviews
Morelli (2012)	Peru	Matses	2010, 2012	Observation; professional experience
Van den Boog (2017)	Suriname	Trio	2016	Interviews; experiments
Heinen (1988)	Venezuela	Warao	1900s-1980s	Narrative analysis