Hunter-Gatherer Children at School: A View From the Global South

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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 hierarchical culture of school. Hunter-gatherer children face economic, infrastructural, social, cultural, and structural barriers that negatively affect their school participation. While schools have been identified as 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.

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> *These observations highlight the need for hunter-gatherer communities to decide for themselves the purpose school serves, and whether children should be compelled to attend.*

KEYWORDS: educational marginalization, mobile communities, hunter-gatherers, universal education

Formal education is a major global development goal, with a specific emphasis on providing education for all. Against this backdrop, activists and researchers have advanced educational alternatives for children usually marginalized at school (Motta & Bennett, 2018; Oviedo & Wildemeersch, 2008; Sosa-Provencio et al., 2020; Tarlau, 2019), including Indigenous children (e.g., Kortekangas et al., 2019; Reyhner & Eder, 2017; Tomlins-Jahnke et al., 2019). Yet most research into minority or Indigenous education does not distinguish hunter-gatherers from other marginalized communities (Bériet et al., 2021; Hays et al., 2019). 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, hunter-gatherer communities struggle more than most other minorities to successfully engage with formal education, even when they desire to do so. They have lower attendance rates, and experience much higher withdrawal rates, than their neighbors (Hays et al., 2019; Lavi, 2019; Thiem & Hays, 2014). These challenges are compounded in the Global South, where lack of funds, lack of infrastructure, complex ethno-linguistic dynamics, and inherited colonial educational systems represent additional barriers to educational access and inclusion (E. R. Peterson et al., 2016; The World Bank, 2017). Yet to date, no studies have attempted to systematically and critically examine the common challenges that hunter-gatherer children confront in formal education systems in the Global South, despite implications for developing culturally responsive education programs. The present article thus aims to fill this gap.

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). Hunter-gatherer social and subsistence systems have developed in different environmental, historical, political, and social conditions (Lee & Daly, 1999). As a result, these communities are highly diverse culturally and linguistically. Today, communities historically classified as "hunter-gatherers" engage in a variety of subsistence modes including wage labor, agriculture, small-scale herding, and state subsidies (Reyes-García & Pyhälä, 2016). Yet even when they have been forcibly settled, have lost access to their ancestral lands, or face ongoing discrimination in the encompassing society, many continue to identify themselves based on their active or historic participation in hunting and gathering activities, practice individual mobility in search of better employment or living opportunities, and maintain their social institutions and cultural values (Gilbert & Begbie-Clench, 2018; Hays & Ninkova, 2018; Hitchcock, 2019; Lavi & Bird-David, 2014;

Reyes-García & Pyhälä, 2016; Thompson, 2016). While we acknowledge that it glosses over localized beliefs, values, and practices, throughout this article we consciously choose to use the term "hunter-gatherer" 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, 1991, 2000; Gibson & Sillander, 2011; B. S. Hewlett et al., 2011; Lavi & Friesem, 2019; Lee, 1979; Myers, 1986; N. Peterson, 1993; Woodburn, 1982). 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 (Endicott & Endicott, 2008; Gibson & Sillander, 2011; Myers, 1986).

Many societies classified as hunter-gatherer extend free choice and an absence of coercion to children and their learning processes (Davis & Cashdan, 2020; Draper, 1976, 1978; Guenther, 1999; B. L. Hewlett & Hewlett, 2012; B. S. Hewlett & Lamb, 2005; Terashima & Hewlett, 2016). Across cultures, hunter-gatherer children spend much of their day in multiaged, mixed-gender play-groups (Konner, 2005, 2016; Lew-Levy et al., 2017, 2018). During play, children emulate adult subsistence activities and social norms (Boyette, 2019; Cohn, 2021; Davis et al., 2021; Gosso et al., 2007). Children often "pitch in" (*sensu* Paradise & Rogoff, 2009) to domestic, subsistence, and cultural activities, during which they learn alongside adults and peers (Boyette & Lew-Levy, 2021; Crittenden, 2016; Gallois et al., 2015; Imamura & Akiyama, 2016; Lew-Levy et al., 2019). Stories—often told in the evenings—entertain while transmitting information about social and subsistence activities (Biesele, 1993; Scalise Sugiyama, 2011, 2017; D. Smith et al., 2017).

As the literature reviewed for this article will show, these strikingly common hunter-gatherer cultural values and socialization practices—which are found in communities living in very diverse social, cultural, and physical environments—contrast sharply with those associated with *school*. As these values are usually not shared by farming or pastoralist neighbors (e.g., B. S. Hewlett et al., 2000), they may underlie the specific and unique challenges that hunter-gatherer communities face in formal education systems.

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 (Transforming Our World: The 2030 Agenda for Sustainable Development, 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 10 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[1] education "essential to vision of a life of dignity for all." In addition to these goals, education is also seen as 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, 2013, 2016), including hunter-gatherers. Within this global discourse, there is very limited 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, frequently 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, the erosion and death of languages, practices, and knowledge systems, combined with the psychological and physical abuse often associated with Indigenous children's participation in schools closely resemble the definition of cultural genocide (Skutnabb-Kangas & Dunbar, 2010; Short, 2010; Woodman, 2019). 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 reviewed below 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 (Bériet et al., 2021; Hays et al., 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 (Bériet et al., 2021; Hays et al., 2019). 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 et al., 2019). Nonetheless, where statistics do exist, they tell a story of extremely low participation rates in formal schools, even in comparison with other marginalized groups in their areas (Thiem & Hays, 2014) and in comparison with other Indigenous peoples globally. 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 that assumed that minority groups had lower cognitive abilities dominated the discourse; this approach is often referred to as *genetic deficit theory* (Berry & Dasen, 1974; Kleinfeld, 1973). 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* (Rayou, 2015; Rochex, 2000). 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 (Persell, 1981; Valencia, 2012).

In the later part of the 20th century, deficit models were challenged by linguists and anthropologists working with minority and Indigenous communities in the United States (Au, 1980; Heath, 1983; Labov, 1970; Phillips, 1983) and beyond (Berry & Dasen, 1974; Greenfield & Cocking, 2014; Scribner & Cole, 2013). 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 often 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). Hunter-gatherer communities share these barriers with other marginalized groups but experience them to a greater degree; this is often linked to the belief by dominant groups that hunter-gatherers are closely associated with "nature," leading to their stigmatization, as described later in this article.

Considering these four approaches—and their historical contributions to the shaping of contemporary schooling—can help shed light on why hunter-gatherer children engage with education at lower levels than dominant groups. Although deficit models have been thoroughly and rightfully 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 article 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 (E. R. Peterson et al., 2016; The World Bank, 2017). Many citizens of countries in these regions, especially minority groups and those living in rural areas, face barriers to

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

Importantly, in this article 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 Files[2] (eHRAF). eHRAF is an electronic collection of ethnographies for over 300 societies coded at the paragraph level using the Outline of Cultural Materials (OCM) (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 82 relevant publications from 23 countries (see Appendix A). We then divided up the publications such that each author read articles matched to their research expertise and geographic focus. While reading, we noted (a) the study community, (b) the geographic area, (c) the year(s) of data collection, and (d) 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 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 stigma. When children do participate in school, their behavior often changes to resemble that which is expected of them—sacrificing at least some of their autonomy. 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 many legal frameworks, in which laws dictate that parents 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 Juǀ'hoan[3] (San) parents told Hays, "It is the kids' decision." (Hays, 2016a, p. 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 (Bombjaková, 2018; Tshireletso, 1997, 2001); 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) (Bombjaková, 2018; Turnbull, 1983); or there is an interest in interacting with individuals from outside their communities, particularly non-Indigenous peoples (Alvares, 2004; Lavi, 2022; Tassinari & Cohn, 2009). For example, among Xikrin (Ge of Central Brazil) school represents a safe place 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 (Hays, 2016b; Lopes da Silva Macedo, 2017; Paksi, 2019; Pollom et al., 2020; Strader, 2015; S. Tinoco, 2007). Children may also simply choose not to go to school, preferring to stay at home to play (Morelli, 2012; Strader, 2015).

Children's autonomous behavior 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; Shahu, 2019; Strader, 2015). Children's decisions about whether or not to attend school are generally respected by parents (Bombjaková, 2018; Bombjaková et al., 2023; Hays, 2016a; Kakkoth, 2014; Kamei, 2001; Lavi, 2019; le Roux, 2000; Ninkova, 2017; Sanglir, 2019; Shahu, 2019; Strader, 2015). 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 (Hays, 2016a; Lavi, 2019; Ninkova, 2017).

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, children face stigma and discrimination, grounded in stereotypes of 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 school and enrolment fees, are often too high for hunter-gatherer families (Biesele et al., 1989; Bombjaková, 2018; Hays, 2016b; Kamei, 2001; Kiema, 2010, 2016; Lee, 1979; le Roux, 2000; J. Lewis, 2000; Ngales & Astete, 2020; Ninkova, 2017; Sekere, 2011; Thiem & 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 (Ketsitlile, 2013; le Roux, 2000; Morsello & Ruiz-Mallén, 2013; Ninkova, 2017; Pollom et al., 2020; Thiem & Hays, 2014; Tshireletso, 1997, 2001). Furthermore, the waiving of fees can have other consequences; for example, Ninkova (2017) describes how, when fees are

waived at rural schools in Namibia, Juǀ'hoan parents are sometimes expected to work in return, or are labelled as "nonpaying" 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 (Cwi & Hays, 2011; Haraseb, 2011; Ketsitlile, 2013; Kiema, 2016; Lee, 1979; Ngales & Astete, 2020; Sekere, 2011). In many cases, families cannot afford to lose children's contributions to the household economy (Bock, 2005; J. Lewis, 2000; Sekere, 2011). Similarly, learning school-based skills comes at the cost of other competencies often necessary for productive livelihoods in transitioning subsistence economies (Hays, 2016b; Reyes-García et al., 2010).

Infrastructural Barriers

One central barrier to children's school access is the incongruence between stationary schools and mobile hunter-gatherer lifestyles (Bombjaková, 2018; Bombjaková et al., 2023; Haraseb, 2011; Kaare, 1994; Kakkoth, 2014; Kamei, 2001; Lee, 1979; Sanglir, 2019; Strader, 2015). For example, among the Hadza, opposition to school includes a "fear of losing the freedom assured in the hunting-gathering life" (Kaare, 1994, p. 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, p. 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 (Davis et al., 2021; Gusinde, 1931; Kaare, 1994; Paladino, 2010; Pandya, 2005; Rival, 2002; Sanglir, 2019; Stearman, 1987; Tanaka, 1987; Tilkin Gallois, 2000; Winkle Wagner, 2006). Children may also travel to schools via buses (van den Boog et al., 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 (Bock, 2005; Cwi & Hays, 2011; Desjardins, 2016; Ngales & Astete, 2020). 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 (Aikman, 2002; Biesele et al., 1989; Cwi & Hays, 2011; Davis et al., 2022; Desjardins, 2016; Hays, 2016b; Ngales & Astete, 2020; Sercombe, 2010; Strader, 2015). 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 (2016b) 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 (Aikman, 2002; Bombjaková et al., 2023; Cwi & Hays, 2011; Hays, 2011; Kaare, 1994; Kakkoth, 2014; Kamei, 2001; Ketsitlile, 2013; Kiema, 2016; Lavi, 2019; le Roux, 2000; Ninkova, 2017, 2020; Pollom et al., 2020; Sanglir, 2019; Thiem & Hays, 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 (Cwi & Hays, 2011; Hays, 2016b; Kaare, 1994; Ketsitlile, 2013; Lee, 1979; le Roux, 2000; Ninkova, 2017, 2020; Sanglir, 2019; Thiem & Hays, 2014). Several reports outline rampant emotional, physical, and sexual abuse experienced by San children inhabiting hostels in Botswana and Namibia (Hays, 2011, 2016a; Ketsitlile, 2011, 2013; Kiema, 2010, 2016; Mokibelo, 2014). 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 uninhabitable hostel conditions.

Social Barriers

Most school teachers come from dominant groups, not uncommonly from other regions of the country (Bombjaková, 2018; Bombjaková et al., 2023; Davis et al., 2022; Dos Santos, 2006; Hays, 2016b; Kakkoth, 2014; Ketsitlile, 2013; Kiema, 2010, 2016; le Roux, 2000; Lopes da Silva Macedo, 2009; Ninkova, 2017, 2020; Paksi, 2019; Sanglir, 2019; Sercombe, 2010; Stearman, 1987; Tassinari, 2001; Thiem & Hays, 2014; Tshireletso, 1997, 2001). 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, 2016b; Ketsitlile, 2011; Kiema, 2010; le Roux, 2000; Lopes da Silva Macedo, 2023; Ninkova, 2020; Sercombe, 2010) These factors can lead to frequent absenteeism (Davis et al., 2022; Pandya, 2005; Reyes-García et al., 2010). In many cases, hunter-gatherer children experience abuse at school from teachers, staff, and other students (Biesele et al., 1989; Hays, 2011, 2016b; Ketsitlile, 2011, 2013; Kiema, 2010, 2016; le Roux, 2000; J. Lewis, 2000; Mokibelo, 2014; Ninkova, 2017; Sekere, 2011; Shahu, 2019; Thiem & Hays, 2014). 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 (Cwi & Hays, 2011; Desjardins, 2016; Hays, 2016b; Ketsitlile, 2013; le Roux, 2000; Ninkova, 2017, 2020; Paksi, 2019; Pamo, 2011; Sanglir, 2019; Wajãpi, 2008). 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 (2016b), 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 et al. (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, 2016b; Kakkoth, 2014; le Roux, 2000; Ngales & Astete, 2020; Tshireletso, 2001). As a result, many parents are viewed as "obstacles rather than partners in education" (see also Bombjaková, 2018; Hays, 2011, 2016b; Kakkoth, 2014; Kiema, 2016; le Roux, 2000; Mokibelo, 2014; Ninkova, 2017; Shahu, 2019; Strader, 2015, p. 13; Tshireletso, 1997). 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 (Kakkoth, 2014; Lavi, 2019). 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 (le Roux, 2000; Pamo, 2011). 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, p. 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 well-being in school (Ketsitlile, 2013; Kiema, 2016). In some cases, parents explicitly reject the "civilizing mission" of school (Kaare, 1994; Kiema, 2016; Shahu, 2019; 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, 2016b; Kamei, 2001; J. Lewis, 2000; Pollom et al., 2020; Sekere, 2011; Shahu, 2019; Strader, 2015; Thiem & Hays, 2014). 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, 2016b). 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 (le Roux, 2000; Ninkova, 2017; Sekere, 2011). Marriage or childbirth may also be viewed as incompatible with schooling (Kakkoth, 2014; Mokibelo, 2014; Thiem & 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 (Hays, 2016a; le Roux, 2000; Shahu, 2019; Thiem & Hays, 2014). Even in educational efforts directly targeting hunter-gatherer communities and seeking to build upon their culture, such as for Congolese BaYaka (Bombjaková, 2018; Bombjaková et al., 2023), and for Namibian Ju|'hoansi (Cwi & Hays, 2011; Hays, 2016b), 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; Cwi & Hays, 2011; Davids, 2011; Haraseb, 2011; Hays, 2016b; Kamei, 2001; Katz & Chumpi Nantip, 2014; Ketsitlile, 2011; Kiema, 2010, 2016; le Roux, 2000; MacKenzie, 2009; Mafela, 2009; Mokibelo, 2014; Morsello & Ruiz-Mallén, 2013; Ngales & Astete, 2020; Ninkova, 2017, 2020; Paksi, 2019; Pamo, 2011; Sanglir, 2019; Sekere, 2011; Sercombe, 2010; van den Boog et al., 2017; Winkle Wagner, 2006). 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 (Aikman, 1995; Bombjaková et al., 2023; Davids, 2011; Hays, 2016b; Ketsitlile, 2011; Ngales & Astete, 2020; Ninkova, 2017; Paksi, 2019; Shahu, 2019; Thiem & Hays, 2014). 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, 2016b).

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 home. Examples of the resulting cultural miscommunication abound in the literature (Aikman, 1998; Bombjaková, 2018; Hays, 2016a, 2016b; Kaare, 1994; Kakkoth, 2014; Ketsitlile, 2013; Kiema, 2016; Lavi, 2019, 2021; Morelli, 2012; Rival, 2002; Sanglir, 2019; Sercombe, 2010; Strader, 2015; Tassinari, 2012; Tshireletso, 2001; Winkle Wagner, 2006). For example, Penan children in Malaysia are described as growing up in a nonhierarchical 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, Ju|'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 (Biesele et al., 1989; Bombjaková, 2018; Davids, 2011;

Hays, 2016a; Kakkoth, 2014; Ketsitlile, 2013; Kiema, 2010, 2016; Lavi, 2019; Lee, 1979; le Roux, 2000; Mokibelo, 2014; Morelli, 2012; Sekere, 2011; Shahu, 2019; Thiem & Hays, 2014; Winkle Wagner, 2006).

Stigma and Discrimination

Hunter-gatherer children are often stigmatized and discriminated against by teachers and peers for coming from "the bush" (Davids, 2011; Desjardins, 2016; Haraseb, 2011; Kaare, 1994; Kamei, 2001; Ketsitlile, 2013; Kiema, 2010, 2016; le Roux, 2000; J. Lewis, 2000; Mokibelo, 2014; Ngales & Astete, 2020; Ninkova, 2017, 2020; Shahu, 2019; Thiem & Hays, 2014; Tshireletso, 1997, 2001; Winkle Wagner, 2006). The stigma might be focused on a particular aspect of their culture, such as eating wild foods (Cruz-Garcia & 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; Kiema, 2010; Ninkova, 2020). 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, p. 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 (Hays, 2016b; Shahu, 2019).

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 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 (Aikman, 1995; Bombjaková, 2018; Cohn, 2002; Hays, 2016a; Kakkoth, 2014; le Roux, 2000; Mokibelo, 2014; Ninkova, 2020; Pandya, 2005; Rival, 2002; Shahu, 2019). 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 (Lavi, 2019; le Roux, 2000; Ninkova, 2020). 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 (le Roux, 2000; Ninkova, 2020).

In contrast to the cultural value of egalitarianism, hierarchy and competitiveness define children's daily lives in schools (Bombjaková, 2018; Bombjaková et al., 2023; Hays, 2016a; Kaare, 1994; Sercombe, 2010; Thiem & Hays, 2014). Sercombe (2010) shows that school's authoritative and test-based culture goes against the values of the Penan in Brunei, who are nonhierarchical and do not value individual achievement. Bombjaková (2018) and Hays (2016b) 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 (Biesele et al., 1989; Ketsitlile, 2011; Kiema, 2010; Lee, 1979). 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 (Aikman, 1995; Katz & Chumpi Nantip, 2014; Mafela, 2009; Rival, 2002; Sercombe, 2010; 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 Botswna 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 (Biesele et al., 1989; Kiema, 2010; Lee, 1979). 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 and Knowledge

Because lessons are mostly taught in languages different from their mother tongue, schooling can lead to the loss of languages (Bériet et al., 2021; Bombjaková, 2018; Davids, 2011; Kiema, 2010; le Roux, 2000; Lopes da Silva Macedo, 2009; Mafela, 2009; Ninkova, 2017; Sercombe, 2010; Strader, 2015;

Tshireletso, 2001). 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 do not 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, grand-parents, and other community members for long stretches of time to attend school, especially boarding schools, may negatively affect the acquisition of traditional knowledge (Aikman, 2002; Hays, 2016b; Kent, 1995; Paksi, 2019; Pollom et al., 2020; Rival, 2002; Shahu, 2019; Siffredi, 2017; Thiem & Hays, 2014; van den Boog et al., 2017; 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 (Aikman, 2002; Hays, 2016b; Heinen, 1988; Kiema, 2010; Ninkova, 2020; Pandya, 2005; Sanglir, 2019; Sercombe, 2010; Shahu, 2019; Thiem & Hays, 2014; Tshireletso, 1997). Even in communi-ties 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 (Hays, 2016b; Pandya, 2005).

Enhancing Human Rights, Economic, and Social Experiences

Despite the 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; Biesele et al., 1989; Hays, 2011; Kakkoth, 2014; Lopes da Silva Macedo, 2009; Rival, 2002; Strader, 2015). 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 knowl-edge 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 (Kiema, 2016; le Roux, 2000; Paksi, 2019; Thiem & Hays, 2014; Tshireletso, 1997, 2001). Exploring San parent and student percep-tions 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 that 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 (Aikman, 2002; Hays, 2016b; Lavi, 2022; le Roux, 2000; Lopes da Silva Macedo, 2009, 2016; Paksi, 2019). 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, 2022).

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 (Collet, 2010; Lopes da Silva Macedo, 2016; Santana & Cohn, 2020; Silva, 2010; Souza, 2001; Tassinari, 2001; Wajãpi, 2008; Weber, 2006). 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). 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. Of course, some of these challenges are shared with other minorities, including other Indigenous groups. Yet several of the challenges identified are specific to the cultural commonalities exhibited by historically mobile egalitarian hunter-gatherer communities (Barnard, 2002; Bird-David, 1990, 2017), who experience more stigma, higher drop-out rates, less success in school, less recognition, and overall greater social exclusion than virtually any other minority group in their respective countries (Hays et al., 2019).

First, 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 stational 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 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 (Asadullah et al., 2020; Hanushek & Woessmann, 2012; Pappu, 2021); 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 & Mendez Acosta, 2021; Rodríguez & 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 United States (Doucet, 2011) and Pakistani and Bangladeshi communities in the UK (Crozier & 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 United States, and Australia, where generations of children suffered immense violence and trauma at the hands of residentials schools aimed to "civilize" them (Sissons, 2005; A. Smith, 2010).

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. Although a thorough exploration of the ways in which schools could incorporate hunter-gatherer lifeways is outside the scope of this article, a clear general suggestion that arose frequently in the literature was the adjustment of school calendars 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. First-language education and culturally relevant curriculum would also bridge the wide 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.

We found very few cases of truly successful formal education initiatives for hunter-gatherer communities. Below, we highlight two examples: the Nyae Nyae Village Schools, in Namibia; and the Instituto de Pesquisa e Formação Indígena (IEPE) in Brazil. An important aspect of both of these initiatives is an effort to empower hunter-gatherers by putting schools in their hands—which will be a crucial element of any community-based education project. These projects face serious limitations, however. Notably, they are only in elementary school. Nonetheless, the importance of these initiatives to the communities themselves should not be overlooked.

The Nyae Nyae Village Schools started in the early 1990s as a private initiative to provide education for the Ju|'hoansi (Cwi & Hays, 2011; Hays, 2016a, 2016b; 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, 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 30 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 nongovernmental organization IEPE. Over the last three decades, Brazilian educational politics and legislations have become more progressive, with Indigenous and "quilombolas" (descendants of escaped enslaved peoples from the colonial period) rights included in the 1988 Constitution (Baniwa, 2010; Gomes & Gomes, 2011; Lopes da Silva Macedo, 2017). Against this backdrop, IEPE started in the 1990s as a collaborative project between Wayãpi communities living in an Indigenous land in Northeast Brazil (Terra índigena Wajãpi, Amapá State), anthropologists, linguists, and educators (L. Tinoco, 2003). IEPE first aimed to improve student literacy. With the support of the local and federal public educational authorities (Secretarias da educação e ministério da educacão), IEPE eventually incorporated mother tongue education, cultural knowledge, skills, and Indigenous transmission mechanisms into the curriculum.

Over three decades, IEPE was transformed into a teacher training program (Lopes da Silva Macedo, 2009, 2016, 2017). Associated with the Ministry of Education's affirmative action efforts—"cotas"—in 2001 universities across Brazil began to offer the "licenciatura indígena" program. This and other university programs have instigated Indigenous-led research alongside academic debates about data sovereignty and self-determination (Bergamaschi & Leite, 2022; De Souza Lima, 2007; Gomes & Gomes, 2011). Since 2006, graduates from the licenciatura indígena have become responsible for the design of intercultural and bilingual Wayãpi school programs, pedagogy, and materials. 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. Currently, Wayãpi teachers in the licenciatura indígena are training to become middle and high school teachers. These educators will help transform school curricula and practices and close the gap between Wayãpi elementary schools and Brazilian middle and high schools (Lopes da Silva Macedo, 2006, 2023; 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 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

When considered individually, many of the educational issues faced by hunter-gatherers in the Global South reflect those experienced by other marginalized communities. Like mobile hunter-gatherers, pastoralists are similarly disadvantaged by stationary schools that restrict children's opportunities for engaging in subsistence activities and related situated learning (Dyer, 2013). The value of embedded autonomy characteristic of hunter-gatherer communities has also been observed in African American families, though its effect on school success remains unclear (Benito-Gomez et al., 2020). And, globally, discrimination encountered by children from migrant backgrounds negatively affects their access to, and success in, formal education (Crush & Tawodzera, 2014; Lu & Zhou, 2013; Merolla & Jackson, 2019). Yet the unique constellation of mobility, autonomy, and discrimination, alongside other challenges, compels further research into hunter-gatherer education, particularly in Global South communities where culturally appropriate education is both underfunded and deprioritized.

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 nongovernmental reports. Further, a large proportion of the studies reviewed here (32%; see Appendix A) 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. There are also 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.[4] 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. And while our review focused on children, further work should investigate hunter-gatherer experiences in adult education. 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 Lavi, 2019; Ninkova and Paksi, 2022, 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. Further attention should also be paid to missionary schools, which often act independently or in partnership with governments to provide education to hunter-gatherer communities. Comparing and contrasting experiences in missionary and public schools is an important avenue for future research.

As mentioned, the most successful cases of hunter-gatherer formal education emerged from partnerships between researchers and communities. Several approaches developed for non-hunter-gatherer communities may further exemplify how applied research can improve hunter-gatherer children's experiences in schools. For example, the "funds of knowledge" approach—developed in Tucson, Arizona, with working-class Mexican communities—capitalizes on existing household knowledge ascertained via qualitative methods to coconstruct high-quality, innovative, and participatory curriculum (Moll et al., 1992). Such participatory curriculum is more in line with Indigenous (and hunter-gatherer) theories of development, where learning is embedded within community social and economic routines (Ng'asike & Swadener, 2019; Nsamenang, 2006). Codeveloped projects that meet the needs of local communities while simultaneously promoting Indigenous epistemologies, literacy, and numeracy have been successfully implemented in home-based early childhood education in Uganda, Kenya, and Zimbabwe (Ejuu & Opiyo, 2022); and in elementary school in Zambia (Serpell, 2011). A rich tradition of alternative pedagogies that challenge Eurocentric curricula and practices by Black, Indigenous, and/or migrant communities has also underscored how education can be redesigned to achieve sociopolitical and economic freedom (e.g., Motta & Bennett, 2018; Oviedo & Wildemeersch, 2008; Sosa-Provencio et al., 2020; Tarlau, 2019). The Chasing Two Rabbits preschooling program[5] developed in partnership with Baka exemplifies how applied participatory research can be used to design culturally sensitive and empowering curriculum for hunter-gatherer communities. More applied participatory research on hunter-gatherer education is sorely needed.

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 & 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 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.

Appendix A

TABLE 1

Information regarding all texts surveyed as part of our review

Lead Author (Year)	Country	Society	Field/Cover-age Dates	Primary Methods
Africa				
Kamei (2001)	Cameroon	Baka	1997–1998	Observation; interviews
Strader (2015)	Cameroon	Baka	2011–2012	Observation
J. Lewis (2000)	Rwanda	Batwa	1993, 1995, 1999	—
Turnbull (1983)	D.R. Congo	Mbuti	1970–1973	Observation
Bombjaková (2018)	Rep. of Congo	BaYaka	2013–2015	Observation; interviews
Bombjaková (2023)	Rep. of Congo	BaYaka	1994–2022	Observation; interviews
Kaare (1994)	Tanzania	Hadza	1984	—
Pollom (2020)	Tanzania	Hadza	2017	Census; foraging returns
Bock (2005)	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; interviews
Mafela (2009)	Botswana	San	—	Secondary data
Mokibelo (2014)	Botswana	San	After 2006	Qualitative interviews
Tanaka (1987)	Botswana	San	1979–1984	Observation; interviews

TABLE 1. (continued)

Lead Author (Year)	Country	Society	Field/Cover-age Dates	Primary Methods
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
Biesele (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; interviews
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

(continued)

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TABLE 1. (continued)

Lead Author (Year)	Country	Society	Field/Coverage Dates	Primary Methods
Davis (2021)	Namibia	Twa	2012–2019	GPS; interviews; experiments
Pamo (2011)	South Africa	San (!Xu, Khwe)	2000s	Activist recommendations
Asia				
Lavi (2019)	India	Nayaka	2010–2014	Observation; interviews
Lavi (2022)	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; interviews
Siffredi (2017)	Argentina, Paraguay, Bolivia	Chorote	1901–1994	Culture summary

(continued)

TABLE 1. (continued)

Lead Author (Year)	Country	Society	Field/Cover-age Dates	Primary Methods
Morsello (2013)	Brazil	A´Ukre Kayapó, Araweté, Asuruní 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 (Kaxinawǎ)	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	2010–2011	Observation; interviews
Alvares (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
Tilkin Gallois (2000)	Brazil	Wayãpi	2000	Observation; interviews; professional experience
Wajãpi (2008)	Brazil	Wayãpi	2008	Observation; interviews; professional experience

(continued)

TABLE 1. (continued)

Lead Author (Year)	Country	Society	Field/Cover-age Dates	Primary Methods
Lopes da Silva Macedo (2009)	Brazil	Wayãpi	2004	Observation; interviews
Lopes da Silva Macedo (2017)	Brazil	Wayãpi	2002–2017	Observation; interviews
S. 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	Obervation
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

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Notes

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

[2] See https://ehrafworldcultures.yale.edu/ehrafe/.

[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 article, 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.

[4] It should be noted, however, that San overall educational attainment is by far the lowest of any ethnic group in their respective countries.

[5] See https://www.chasingtworabbits.org/.

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