A roadmap to doing culturally grounded developmental science

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Abstract

This paper provides a roadmap for engaging in cross-cultural, developmental research in practical, ethical, and community-engaged ways. To cultivate the flexibility necessary for conducting cross-cultural research, we structure our roadmap as a series of questions that each research program might consider prior to embarking on cross-cultural examinations in developmental science. Within each topic, we focus on the challenges and opportunities inherent to different types of study designs, fieldwork, and collaborations because our collective experience in conducting research in multiple cultural contexts has taught us that there can be no single "best practice". Here we identify the challenges that are unique to cross-cultural research as well as present a series of recommendations and guidelines. We also bring to the forefront ethical considerations which are rarely encountered in the laboratory context, but which researchers face daily while conducting research in a cultural context which one is not a member. As each research context requires unique solutions to these recurring challenges, we urge researchers to use this set of questions as a starting point, and to expand and tailor the questions and potential solutions with community members to support their own research design or cultural context. This will allow us to move the field towards more inclusive and ethical research practices.

Keywords: cross-cultural research, developmental methods, diversity

Socio-cultural environments play a central role in shaping child development (Bronfenbrenner, 1979; Greenfield et al., 2003; Vygotsky, 1978). Interest in accounting for cross-cultural variation in child development has waxed and waned since the turn of the 20th century (see Amir & McAuliffe, 2020 for review). In the 1920s, anthropologists working in small-scale societies paid special attention to children and adolescents, but their observations were usually restricted to single populations (see Levine, 2007 for review). In the 50s and 60s, John and Beatrice Whiting undertook a landmark study examining children's social behaviour in six cultures (Whiting & Edwards, 1973; Whiting & Whiting, 1975). Using a systematic protocol, the authors examined the role of subsistence and settlement structure on children's emerging personalities. Since then, empirical, and theoretical work by both anthropologists and psychologists has shed light on the complex ways developmental processes are shaped within cultural contexts (Greenfield et al., 2003; Harris, 1995; Hewlett & Lamb, 2005; Kagitcibasi, 2017; Keller, 2017; Kline et al., 2018; Lancy, 2008; Rogoff, 2003; Shweder et al., 2007; Super & Harkness, 1986).

Nonetheless, a majority of psychological studies continue to focus on selected populations in the Global North, also often called "WEIRD" societies, or western, educated, industrialized, rich, and democratic societies (Henrich et al., 2010). Studies in the top English-language journals in the field continue to be conducted by researchers from these countries, and often assume an audience in the Global North (Dutra, 2021). Arnett (2008) found that in six top APA journals, 98% of first authors and 95% of the sample populations originated from the US, English speaking countries or Europe. Moreover, the majority of US samples consisted of European Americans (77%). This problem is magnified in developmental research. Over 90% of manuscripts published in the top three experimental developmental psychology journals between 2006 and 2010 were drawn from US, European and English-speaking samples (Nielsen et al., 2017). This persistent sampling bias often leads to faulty scientific conclusions. Many psychological phenomena assumed to be universal, ranging from aspects of social cognition to visual perception, vary considerably across cultures, especially as it comes to samples from small-scale societies (Henrich et al., 2010). In other words, much of psychological research may not generalize beyond the sampled population.

In response, psychologists are increasingly interested in expanding their research to include diverse communities from outside the Global North, including among rural or small-scale societies – the "Majority World" (Kağıtçıbaşı, 1996). While much progress has been made (Barrett, 2020a, 2020b), Global North societies continue to be overrepresented in developmental research (Apicella et al., 2020). One important barrier to achieving a global and representative developmental science is that researchers are often not formally trained in culturally grounded theory, field methods, and ethically responsible community-engaged research designs (Broesch et al., 2020; Kline et al., 2018).

In this paper, we aim to help researchers overcome this barrier by outlining a roadmap to doing practical and ethical cross-cultural developmental research. This roadmap is drawn from our combined experience investigating child development in communities from around the world. Because every research program, and every community, is unique, we offer no single "best practice." Instead, we structure our roadmap as a series of questions that each researcher might contemplate prior to embarking on cross-cultural comparisons of human development. Because the challenges and ethical considerations faced in the field are distinct from those encountered in university laboratory contexts, we urge researchers to use this set of questions as a starting point, and to expand and tailor the questions and potential answers with their research

team, participating community members, and local scientists. We view this roadmap as relevant to those seeking to contribute to a globally representative developmental science, and to those who wish to make culturally grounded inferences about child development within and beyond WEIRD contexts. We acknowledge that another important barrier towards a representative developmental science is the continued invisibility of research from the Global South (Dutra, 2021) and the lack of equitable collaborations between researchers from the Global North and the Global South (Urassa et al., 2021). As researchers trained and employed in western scholarly institutions, our examples and guiding questions may be limited. We welcome and encourage critique and commentary from colleagues whose intellectual contributions to cross-cultural research have been routinely marginalized and overlooked.

The Four Questions

Question 1: What is the objective of the research?

When researchers undertake cross-cultural studies, they (either implicitly or explicitly) seek to study (a) how developmental processes are universal, (b) how developmental processes vary, and/or (c) what psychological mechanisms enable human culture. Each of these options has implications for the role of culture in study design. We suggest that researchers clearly identify their objective(s) and use those objectives to make informed decisions regarding the recruitment of participants from specific cultures, study design, and hypotheses. For researchers with a long-term relationship with a community of participants, the study design should accommodate the local sociocultural setting, rather than the other way around.

(a) Are developmental processes universal?

Developmental scientists seeking to examine human universals are often concerned with finding "core mental or behavioural attributes shared by humans everywhere" (Kline et al., 2018, p. 2). However, human universals need not be invariant in their behavioral manifestation across cultural contexts (Norenzayan & Heine, 2005). The same developmental processes can vary in their ontogenetic timing, phenotypic expression, and behavioural outcomes depending on the socio-ecological and socio-cultural settings in which the trait occurs (Greenfield et al., 2003). For example, there is considerable intra- and inter-cultural variation in the timing of motor milestones (Karasik et al., 2010). Variation in motor development appears to be due to differences in infant experiences and opportunities for practice rather than differences in the developmental process itself. We suggest that researchers cannot assume that "universal" traits will appear phenotypically identical in all contexts. Instead, most traits and developmental processes are sensitive to sociocultural context; this can mean multiple developmental pathways to a single outcome, or multiple outcomes from a single developmental process (Greenfield et al., 2003; Keller & Kärtner, 2013; Kline et al., 2018). This does not mean that the objective of identifying universal processes or mechanisms is not a valid and plausible endeavor. We suggest that research teams recognize this truth (stated above) as they interpret their findings with this in mind. We also suggest taking a multi-method approach rather than relying on one set of data in one observation or experiment to help aid in interpretation.

For example, Kanngiesser and colleagues (2022) conducted an experiment on children's enforcement of conventional norms in eight different societies, including urban locations in the Global South and North and rural locations in the Global South. They found that children in all

societies intervened more frequently when a peer supposedly violated norm than when a peer was following the same rules. However, the frequency with which children intervened varied across societies with intervention rates slightly decreasing with increasing community size. Moreover, the way in which children intervened varied, too, exemplified by children in the rural locations using more imperative protest than children in the urban locations. This shows that functionally similar behaviors (i.e. to ensure rule compliance) can be expressed in culturally variable ways.

b) How and why do developmental processes vary?

Researchers focused on cultural variation are usually concerned with understanding how experience, learning, or context contribute to cognitive or behavioural differences between and among populations. For example, patterns of infant-caregiver contact, such as touch, breastfeeding, and communication are shaped by cultural values of dependence and interdependence (Hewlett et al., 2000; Keller et al., 2005). The developmental timing of what is learned and from whom is sensitive to sociocultural context and the tradeoffs learners make, as their own social context changes even across the course of their lifespans (Demps et al., 2012; Kline et al., 2013; Lew-Levy, Kissler, et al., 2020). The importance of accounting for context is exemplified by a study on children's risk and time preferences by Amir and colleagues (2020). The authors collected data in three market integrated societies (U.S., India, Argentina) and among food producing Shuar forager-horticulturalists from Ecuador. Experimental results suggest that Shuar children were more risk-averse and present-oriented than children in the other three societies, consistent with behavioural adaption to high levels of resource uncertainty. The authors then replicated their results, this time by comparing the risk and time preferences of Shuar children living in a market-integrated peri-urban community to more remote Shuar who continue to produce the majority of their food (Amir et al., 2020). The authors demonstrated that market integration affected both between- and within-site differences. We suggest that researchers explicitly measure the contextual variables of interest (e.g., autonomy/conformity, rural/urban). Doing so can help ensure that predictions regarding cross-cultural differences are grounded in empirical data rather than anecdotal evidence or post-hoc explanations, and that, alongside consensus, variation in beliefs and behaviors *within* communities is accounted for.

c) What psychological mechanisms enable human culture?

A third line of inquiry seeks to identify the psychological mechanisms that make human culture possible. For example, teaching is hypothesized to increase the learning fidelity of hard-to-acquire information, leading to the evolution of cumulative culture (Castro & Toro, 2014; Fogarty et al., 2011). Sensitivity to ostensive signals, such as gaze following, infant-directed speech, pointing, theory of mind, and joint attention may have evolved to facilitate teaching and learning from teaching (Csibra & Gergely, 2006). While certain forms of teaching, such as lesson-style didactic instruction from dedicated adults, may vary by culture (Lancy, 2016), more participatory-based forms of teaching (see Kline, 2015 for review) and formal apprenticeships (Coy, 1989) are apparent across cultures. Children's teaching abilities appear to follow a stable developmental pattern (Boyette & Hewlett, 2017; Lew-Levy, Kissler, et al., 2020;; Strauss & Ziv, 2012). While ethologists using a more functional definition of teaching have identified this behavior in non-human animals, including ants and meerkats (Hoppitt et al., 2008), teaching as intentional instruction in non-human animals appears rare. These lines of evidence suggest that teaching may be a natural cognitive ability in humans (Csibra & Gergely, 2011; Strauss & Ziv, 2012). Other psychological mechanisms considered to underpin human cultural transmission

include natural pedagogy (Csibra & Gergely, 2011), overimitation (Legare & Nielsen, 2015), and social learning biases (Henrich & Mcelreath, 2003; Kendal et al., 2018). In the research summarized above, if any one research team had focused on one species, one culture, or one age group, the understanding of pedagogical mechanisms would be quite different. Therefore we suggest that researchers interested in understanding what enables human cultures should be prepared to develop research programs which encompass cross-species, cross-cultural, and developmental perspectives on behavior.

Depending on how researchers answer, Fox and King (2002, p. 4) suggest to "start with those behaviors and beliefs and the understanding we wish to attain about them and then see what concepts work well to help us do that." Here, we provide some guidelines for appropriately identifying aspects of a cultural context (by starting with identifying behaviors and beliefs) that are relevant to one's research objectives.

First, as with any scientific method of inquiry in the social sciences, one must move from research objectives and topics of interest to identifying and eventually defining specific variables and behaviors of interest. While this general process is not unique to cross-cultural developmental psychology, the specific way these decisions are made requires additional attention and resources. Identifying relevant variables within one's own familiar cultural context need not be an intensely laborious process. However, when working in a sociocultural context in which one is unfamiliar, the research team must construe the variables broadly.

One problem that cross-cultural developmental scientists often encounter is that they approach a topic from a narrow perspective due to their extensive training and expertise in one specialized topic of interest. Some have pointed out that this approach has critical issues even within a western context. Dahl (2017) recently argued that developmental science has assumptions about children's experiences outside of a laboratory context as well as the developmental process itself, referred to as "ecological commitments". He defines ecological commitments as the unstated theoretical perspectives and assumptions about children's experiences outside of the research context. This argument becomes even more important when doing research outside of ones' own cultural context. For example, we may look to parenting behaviors to examine the impact of early social experience on the development of empathy in children when, in fact, in many societies, siblings, elders and others in a community may play a more significant role in caregiving. We may also be construing the concept and defining empathy in a way that is narrow and not culturally relevant outside of a western, urban, nuclear familial context. In fact, it is an open question whether what we observe parents do in the lab (e.g., parental responsiveness) is representative of parenting behaviors at home (Dahl, 2017). This is not to suggest that we should not do structured observations or laboratory experiments, rather the point is to suggest that we take a broad approach to defining concepts to fully capture the essence of the phenomena. We suggest that researchers construe the variables of interest broadly to attempt to identify potentially relevant influences and behaviors. Identifying broad variables of interest will allow one to consider which aspects of "culture" are particularly relevant and influential.

Question 2: How can I do culturally grounded research?

Psychologists can maximize the impact of their research by making theoretically grounded decisions regarding participant recruitment. In this section, we discuss how sample identification, familiarization with the ethnographic literature, and teamwork can help researchers with such decisions. While we focus exclusively on identifying a good fit between

participants' sociocultural context and the study design, ethical recruitment and consent will also include feedback and contributions from the participating people and communities. We have written explicitly about this below (see Question 5) and elsewhere (Broesch et al., 2020).

a) Identifying Cultural Contexts

The process of identifying which cultural contexts and participants to recruit for a study in cross-cultural research often requires a tremendous amount of time, effort, and resources dedicated to establishing relationships and learning about the sociocultural context of those participants' lives. These relationships often span decades, become personal/familial, and last for entire careers. We therefore must begin this section by recognizing participation is consent-based, and that researchers should consider the ways in which they will approach the researcher-participant relationship as reciprocal. Researchers must first develop a deep and specialized understanding of the beliefs, norms, and activities of a specific community or region. Researchers can then aim to understanding child development within these contexts. For example, Ndlovu (2019) conducted an investigation of parenting values in urban and rural Zulu communities in South Africa. Through semi-structured interviews with mothers, and by analyzing Zulu proverbs, Ndlovu demonstrated that Zulu socialization goals included learning important chores, reverence for elders, and the transmission of traditions. How parents adapted these socialization goals to rural and urban settings nonetheless results in observable differences in parenting practices and child behaviour within both communities. Such analysis would not be possible without an in-depth understanding of Zulu culture, language, and beliefs and enriches our knowledge on the variability of socialization goals and implications for child development in important ways.

Another strategy is to compare groups across regions or sites where the sociocultural context differs along a particular dimension of theoretical interest. This can often require teams of researchers working around the globe with different communities to come up with a shared method. This task is a theoretically important one in addition to being a methodological one—methods can erase variation as well as capture it. For example, Karasik et al (2015) were able to document broad variation in the ontogeny of sitting when they examined infants' ability to sit unsupported. A comparison-based strategy can also be used within a single community of participants. For example, in the domain of cognition about animals or natural kinds, researchers have attended to children's exposure to wild or domestic animals, pets and livestock, and whether animals are traditionally imbued with any mental or spiritual life in the child's local cultural context. In their comparison of ecological reasoning, Ross et al. (2003) found that white American urban children, for whom plants and animals play a limited role in daily life, showed stronger anthropocentric folkbiological models. White American rural children showed a developing sensitivity to ecological relations distinct from urban children. Finally, among the Menominee (Native American), who harvest forest products and participate in hunting and fishing, children showed clear signs of ecological reasoning from an early age. This research demonstrates how careful site selection can result in a clearer understanding of the contextual features which lead to variation in cognition and behaviour.

This also means that researchers who have built relationships with participating communities are unlikely to identify and develop new relationships for each research question. How, then, can researchers explore multiple questions with one and the same study population, and still take the role of cultural variation seriously? One strategy is to avoid relying exclusively on cross-cultural comparison as a method, especially where the comparison seems to rely on a

West versus "the rest" logic. Instead, researchers can focus on investigating developmental processes, variation, and the role of culture in development within a single sociocultural context or geographic location. After all, most psychological studies are not cross-cultural, but rather, focus on the cognition and behavior in Global North (or WEIRD) communities. In fact, Henrich et al.'s (2010) review of existing cross-cultural comparisons in psychology suggests that these societies are likely to be outliers. Publishing single-population studies on child development from a more inclusive range of sociocultural contexts goes a long way towards correcting the persistent sampling bias in the developmental literature and can improve the generalizability of research findings. In some cases, Global North researchers may only need to relocate to local community centers or parks to recruit an increasingly diverse group of participants.

b) Ethnographic literature

Apart from searching the ethnographic canon, more targeted inquiry can be made consulting the electronic Human Relations Area Files database (eHRAF; https://ehrafworldcultures.yale.edu/ehrafe/). eHRAF is made up of ethnographies for over 300 cultures from around the world. Because eHRAF is online, carefully organized and searchable both by a standard set of codes as well as by keywords, it provides an easy starting point for both qualitative and quantitative reviews of human cultural variation. This can be a valuable resource for helping researchers identify sociocultural contexts for theoretically interesting comparisons, and to scientifically justify a specific set of comparisons based on existing ethnographic work. However, it is worth noting that many of the entries are historical in nature. This matters for two reasons: First, the entries may not accurately represent the present-day realities of prospective participants and instead should be treated as sources of insight into cultural heritage. Second, the entries are typically authored by early colonizers, missionaries, and/or anthropologists. The writing therefore includes explicitly racist and sexist perspectives, and should be viewed as it was written, through the cultural lens of white supremacy and colonization. Still, eHRAF can be a useful resource when its limitations are recognized. For example, Ember and Cunnar (2015) used eHRAF data from 56 societies to examine girls' and boys' economic contributions as a function of subsistence strategy. In most societies, girls in middle childhood made greater contributions to subsistence than boys. However, the amount of economic work performed by children varied alongside the intensity of the subsistence strategy, with hunter-gatherer children participating in the least amount of subsistence work, followed by children from horticulturalist, agriculturalist, and pastoralist societies.

In addition, researchers can gain a regional expertise by reading more recent ethnography of their prospective sites or regions. Art, music, novels as well newspapers can offer cultural insights and inspirations for research questions. A picture of parents scaling the walls of a school building in Bihar state, India, to help their children cheat on exams, exemplified the immense pressure and competition students face in the Indian school system and the length parents will go to support them. It also inspired an experimental study on interventions to promote honest behaviour in school settings in collaboration with an Indian colleague (Kanngiesser et al., 2021). When the study was published, the Times of India used the same image with a more optimistic headline that "a promise may stop kids from cheating". This kind of preparatory work can help a researcher choose a culturally appropriate research topic and method. For example, reading about linguistic communication in the Pacific (e.g., Watson-Gegeo & White, 1990) would help a researcher understand that methods asking hypothetical questions (including vignettes) violates conversational norms and is therefore unlikely to elicit meaningful responses from participants.

c) Teamwork

Building community relationships, infrastructure and deep ethnographic knowledge is essential for high quality cross-cultural research and can ensure ethical research practices in vulnerable communities in particular (Broesch et al., 2020). Such capacity building is only possible when collaborating across disciplines, internationally, with community leaders, and with regional experts in various fields of social science (Broesch et al., 2020; Urassa et al., 2021). Collaboration can lead to the exchange of expertise. For example, lab-trained researchers may have discipline-specific expertise in controlled experimental design. In contrast, field-trained researchers may excel at robust, multi-method design, as well as relevant sociocultural knowledge. Lab- and field-based researchers can also share resources. Field-based researchers often need to maintain continuous funding at their field sites in order to keep permits, infrastructure, and staff working. Laboratory-based researchers could help to offset some of these costs, whether directly (travel, personnel) or through contributions to infrastructure (equipment). Sharing funds in this way means that the field researcher can afford to collect additional data for a collaborative project, and the lab researcher can gain a high-quality cross-cultural sample without simultaneously fully funding both lab and field operations. International collaborations can also be complementary in strategic ways (Urassa et al., 2021). Researchers from low- or middle-income countries bring a wealth of knowledge, research questions, and training which diverge from, and are often complementary to, those of researchers from high-income countries. Researchers from institutions in high-income countries can promote and support their colleagues and collaborators at institutions in low- or middle-income countries, who may have comparatively less financial support (Urassa et al., 2021). Without contributions from researchers beyond the Global North, psychology at an international level is unlikely to escape its overwhelming WEIRDness (Dutra, 2020). These considerations are especially important when researchers form partnerships across power differentials, which typically involve a powerful Global North institution and a peripheral or Global South institution, sometimes in a former colony. We suggest that collaborators explicitly discuss amongst themselves how their collaboration will include meaningful and equitable contributions of, and benefits to, all parties, from study conception, design, grant writing, data collection, and publication. We recognize that we have not reliably achieved this as collaborators, and that this is also a call to us to improve our own practices.

Question 3: How do I design my cross-cultural developmental study?

The tradition for developmental science to rely on detail-oriented and technologically advanced methods of developmental science make field-based data difficult to collect and interpret across sociocultural contexts. As a result, some of these discipline-specific methods may need to be redesigned for use across disciplines or contexts. One strategy is to fit these precise experimental methods into a broader set of tools already used by field researchers. Field researchers typically rely on multiple types of complementary data, with more space for measurement error, and lowered demands for controlling the environment in which the experiment takes place. This can include interviews aimed at uncovering cultural beliefs, word-sorting tasks to infer conceptual organization, systematic observational techniques, and low-tech experimental options (Bernard, 2011). Here, we review some of these techniques.

a) Methods to consider

Often a topic is examined using a specific set of predetermined and validated (in the west) tools and procedures. While these may capture the essence of the variable of interest in one society, they may not capture the variable of interest in another society (Dahl, 2017). In fact, even in a western context, scientists often focus on a narrow aspect of a variable of interest, and they may be missing out on relevant and important features (Dahl, 2017). We argue here as others have stated before us that there is an urgent need to use multiple methods to examine questions across diverse social contexts (Kline et al, 2018). Relying on any single method may result in an inaccurate or incomplete understanding of the developmental process. For example, consider the development of an emotional bond (attachment) in infancy. The majority of research on Attachment examines infant-parent relationships as this relationship is thought to be a central pillar of the attachment. Often the specific timing, frequency and manner of behaviors is examined using a specific set of definitions and tools—namely, the 'strange situation' task. In doing so, they make assumptions about the ecological validity of laboratory tests – extrapolating parenting behaviors from a short video observation. Keller (2013) argues that Attachment Theory needs revision in light of ethnographic evidence (typically based on naturalistic observations and interview methods) that children are forming strong emotional bonds with multiple caregivers instead of one primary caregiver. In fact, researchers know very little about parental responsiveness in everyday context. We suggest that researchers use multiple methods to finesse the inherent tradeoffs between replicability and ecological validity. For example, one might consider interviewing parents, elders, older children, teachers, to determine how people construe specific variables of interest, and how those variables impact their everyday lives. These may occur in an informal unstructured or a formal and structured interview manner and can be used to interpret behavioral or observational data. For example, Kline (2016) uses interview data to show that fine-grained behavioral observations, rather than time-allocation based observations, matched Yasawan adults' accounts of the importance of teaching in childrearing. Ultimately, researchers must gather a deeper understanding of the variable of interest to provide a body of evidence and avoid misconstruing the data and developing an inaccurate portrayal of the developing child.

Participant observation is the defining method for social and cultural anthropology (Howell, 2018). Participant observation involves "the open-ended inductive long-term living with and among the people to be studied, the sole purpose of which is to achieve an understanding of local knowledge, values, and practices" (Howell, 2018, p. 2). By spending unstructured time in the community and participating in community events, the ethnographer comes to understand the worldview of the community under study, and to question the ethnographer's own beliefs about the world. Since participant observations involves learning about culture with, among, and from community members (Ingold, 2014), it is especially relevant to those who study child development. For example, by carefully combining long-term participant observation with experimental methods, Astuti and Harris (2008) examined how Vezo children and adults from Madagascar understand death. The authors found that Vezo have two different conceptions of death; in biological terms, and based on everyday interaction with animal deaths, and in religious terms, based on involvement in rituals and practices. Further, Vezo call upon these conceptions in different, nonoverlapping contexts which was discovered by participant observations. By integrating participant observations with experimental work, the authors shed light on the developmental processes underpinning children's understanding of the afterlife.

Primarily stemming from ethological studies of non-human animals (Altmann, 1974), structured observations entail recording the behaviors of individuals in naturalistic or semi-naturalistic settings. In situ structured observations usually include focal follows and scan samples (Blurton Jones, 1972; Johnson & Johnson, 1987; Whiting & Whiting, 1975). Focal follows involve observing single individuals over a predetermined time period and recording their behavior either continuously or at regular intervals (e.g., 1 minute, 5 minutes). Scan samples involve recording the activities of multiple community members at regular time intervals (e.g., every hour). Using video recordings and specialized software, more fine-grained behavioral analysis can also be performed. Behavioral observations have helped shed light on children's participation in community activities (Rogoff et al., 2018), such as the frequency of different learning activities (e.g., play types; Boyette, 2016; Gosso et al., 2005; Lew-Levy, Boyette, et al., 2020), and relationships of care (e.g. alloparenting; Crittenden & Marlowe, 2008; Fouts & Brookshire, 2009; Hewlett, 1991; Page et al., in press). Different observational regimes (e.g., continuous versus instantaneous) have different implications for the observation of rare, discrete behaviors versus common, ongoing behaviors.

Interview methods can range from open-ended conversations on a topic ("tell me about housebuilding…") to semi-structured or structured methods which limit the types of responses participants can give. Interview data are uniquely useful in that they allow participants to explicitly share their ideas and opinions on a study topic. Interviews and other types of qualitative methods are often favored by researchers who want to give primacy to their participants' perspectives – for example, they are more frequently used in studies with adolescents or young adults (Bhatia, 2017; Toren, 2011) and have been recommended for research with vulnerable populations such as refugee adolescents or colonized groups (Gifford et al., 2007; Bhatia, 2017). The more naïve a researcher is to the cultural context, the more this is a benefit rather than a cost. Interviews are the researcher's opportunity to talk to the true experts on a cultural context—the people living, breathing, and creating it. While even structured interview data are often qualitative, researchers can also code these data quantitatively and conduct statistical analyses on those data (Fakis et al., 2014; Malti et al., 2020). Such data can be useful in cross-checking whether more top-down methods are consistent with what participants express.

b) Ecological validity

It is a common assumption that findings from standardized assessments generalize to everyday behavior and are associated with everyday experience. However, these assumptions rest on an intuitive and often implicitly held knowledge of what is typical for a cultural context. When working cross-culturally—or even with a more diverse range of participants within a cultural context—researchers must explicitly and directly address multiple dimensions of ecological validity as applicable to their research objective (Hruschka et al., 2018).

When researchers aim to compare measures directly along an axis of cultural variation, it is important that the stimuli, method, and measures carry the same meaning and valence for participants. This can be as straightforward as the symbolic meaning of colors and the translation of words, or as complex and subtle as the interpretation of a "hypothetical" vignette or the social conventions that parallel a supposedly neutral "economic game" (Gervais, 2017). In some cases, researchers may consider using tailored stimuli for each location, and adjusting their criteria for between-site comparisons to deviate from strictly standardized methods to prioritize matching meanings across contexts. For instance, in a study on visual attention in an urban German and a rural Cameroonian Nso sample, the cultural differences in context-sensitivity clearly depended

on the familiarity of the stimuli used: when stimuli where equivalent in terms of familiarity (i.e., stimuli that were culturally matched, but physically different, as for instance a "familiar" cow on a field) rural Nso participants showed, as expected, higher levels of context-sensitivity, whereas the reverse pattern of differences was found for identical stimuli that were more familiar to the urban German participants (Jurkat et al., 2020).

It is also important that the format in which the task is delivered is similarly familiar to all children. Ideally, culture-sensitive tasks enable children to "do their tricks" rather than force them to "do our tricks" (Wober, 1969). In this sense, it is important to carefully reflect on the implicit assumptions (in terms of skills, competence, and communication) of the tasks. Multiple methods can help researchers ensure that experimental findings are generalizable to other contexts; for example, Lew-Levy, Pope, et al. (n.d.) found that BaYaka forager and Bondongo farmer children from the Congo Basin infrequently innovated hooks from straight pipe cleaners to retrieve a prize in an experimental paradigm. In naturalistic observations, however, children innovated many aesthetic and practical objects using pipe cleaners, a culturally novel material. Rather than concluding that children are poor tool innovators, this research suggests that classic experimental paradigms may not be the best way to assess and compare children's innovative capabilities across cultures, given that there was a large discrepancy between children's performance during everyday activities and a laboratory designed experiment.

The potential awkwardness of formal experimental methods should also not be underestimated. In particular, the laboratory set-up for children can be particularly daunting in many contexts. Much of developmental science rests on experimental procedures that require children to "perform" while under observation or interaction with an unfamiliar adult. Such contexts are not quite so odd to children in urban environments, where it is not uncommon for adults to address children directly and ask their preferences or opinions. This is in stark contrast to cultural contexts where children are rarely addressed directly by adults (e.g. Cristia et al., 2019). In one study examining a basic developmental milestone, mirror self-recognition, researchers found that children "froze" upon seeing their reflected image instead of removing a mark which was surreptitiously placed on their face (Broesch et al., 2011). Children often feel uncomfortable when an unfamiliar adult asks them a direct question. Some researchers have addressed this issue by avoiding a direct question and instead making a statement and following and inferring from the child's gaze behavior (Barrett et al., 2013). Others have focused on studying children's abilities in peer interactions, using experimental situations where adult experiments act primarily as facilitators (Schäfer et al., 2015; Zeidler et al., 2016).

c) Practical Considerations

Even with the best of preparations, study designs almost always need to be adjusted to local conditions. While recruitment may be relatively fast, the upper limit for sample size is likely to be low in sites where the community the researcher has access to is small and expanding access would require further time and resource investment. In other words, the opportunity for piloting methods, or for running successive studies on site with new samples, is sometimes non-existent. For example, in 2007, Broesch and colleagues traveled to a remote island in Fiji to begin two projects which required a medium to large sample size. Broesch and her team were informed that the current population on the island was 5000. However, their field manager received information about the population size from his distant relative from another island. These two families have a "joking" relationship where they engage in extreme pranks or extensive teasing. The field manager asked his cousin for information about the population size

(and other things) before visiting this island—and the cousin played a prank by indicating the size was 5000 when in fact it was closer to 500 and the studies were impossible to conduct in villages of this size. After extensive consultation with community members and parents, they devised a project that was feasible with small sample sizes and wide age ranges of children. Such flexibility in timeline and design is necessary to conducting successful projects across cultures.

Question 4: How do we practice ethical, cross-cultural developmental research?

Ethics is at the core of cross-cultural developmental research. We espouse a view of research ethics that encompasses a continuous and critical reflection on one's research practices (Powell et al., 2013; Sieber & Tolich, 2013). For a researcher, working outside of the context of universities or research institutions comes with a multitude of ethical challenges, both structural and situational (Broesch et al., 2020). This applies to researchers around the globe, but because of the power differentials and professional privilege researchers from Western institutions hold, researchers from these institutions may be at particular risk of unethical behavior when working with participants in the Global South. Examples of structural challenges include these power differentials between researchers and participants, as well as differential access to resources (e.g., financial, medical, educational) which are often the product of historical injustices (e.g., colonialism). Failure to adequately address the ethical complexities of cross-cultural developmental research can lead to research practices that perpetuate stereotypes, reinforce historical injustices or outright harm participants and their communities. In its most extreme form this can lead to so-called "ethics dumping"—a practice of using different ethical standards depending on the location of the research (Schroeder et al., 2019). Even well-intentioned programs such as parenting interventions can have ethical pitfalls: Morelli and an international team of co-authors (2018) critically evaluated UNICEF's Care for Child Development (CCD) positive parenting program which is primarily implemented in low- and middle-income countries. They remarked that "the CCD and other similar interventions worry us because their goal is to modify how people with certain lifestyles care for children by training them in positive parenting practices of people with different, Western lifestyles" (p. 9) and pointed out that "their focus on poor communities can lead to the stigmatization of poor people in regard to their parenting abilities" (p.14).

a) Ethics codes and guidelines

There is a plethora of regulations and guidelines on research with human participants. For example, the U.S. Department of Health & Human Services (HHS) has compiled a list of more than 1000 laws, regulations and guidelines on human subject research from around the world (Office for Human Research Protections, 2020). Ethics codes of psychological associations are usually focused on researchers and practitioners in the respective country, and often do not sufficiently address and incorporate guidelines for research that is conducted in a global context and with potentially marginalized, resource-poor and/or Indigenous communities. In the last two decades, Indigenous research codes have been developed in Australia, Canada, New Zealand and South Africa to address ethical concerns of Indigenous communities (Assembly of First Nations, 2009; Australian Institute of Aboriginal and Torres Strait Islander Studies, 2020; Hudson et al., 2010; South African San Institute, 2017). These codes vary in length and detail, but at their heart all stress the importance of respect for Indigenous peoples and their knowledge, the need to consult and involve them in any planned research and for the research to generate benefits for involved communities.

Research involving children faces additional ethical challenges. A comprehensive guide for Ethical Research Involving Children (ERIC; Powell et al., 2013) with an explicit global and interdisciplinary focus has been developed by a consortium consisting of UNICEF's Office for Research, the Childwatch International Research Network, the Centre for Children and Young People at Southern Cross University (AUS) and the Children's Issues Centre at the University of Otago (NZ). The authors view ERIC as "an opportunity for international dialogue around the more difficult issues and questions that shape our work as a very diverse community doing research that either directly involves children or potentially impacts on their lives and well-being" (p. 12). The associated website (https://childethics.com) contains additional resources such as case studies and recent publications for further guidance. Moreover, the Society of Research in Child Development has recently published an updated version of their ethical guidelines, emphasizing that the society seeks "to create a body of research that is inclusive of the world-wide human diversity of children, families, and peoples" (SRCD Governing Council, 2021, p. 2) Particularly noteworthy is the inclusion of cultural, linguistic, and population competences as standards for ethical research conduct (p. 3):

> "Cultural and linguistic competence and the competencies necessary to understand the developmental needs of persons, families, and peoples with distinct characteristics and within different contexts is required to ensure population-valid and appropriate recruitment procedures, measure selection, implementation, data collection and interpretation, and dissemination procedures across and within diverse populations."

However, highlighting the need for cultural and linguistic competencies and mutual respect is the exception rather than the norm in current ethics codes. Indigenous ethics codes map a way forward that shifts the power of ethical approval from institutions in the Global North to local communities and gives communities the right to veto research or even expel researchers that behave unethically. Critically, this requires ongoing reflection during the different stages of a research, for instance when laying foundations (e.g., Which historical experiences has the community made with power inequality? In how far has empowerment taken place are could be part of the project?), when establishing a cooperation (Which local structures should I consider? How to balance scientific goals and community benefit? In what ways are traditional/formal knowledge acknowledged, used, or taught in the community. How can the researcher contextualize their scientific goals within the communities' scientific framework?), or when assessing the data (What is an appropriate way of recruiting participants? What are appropriate ways of reaffirming consent at various phases of a project?).

This may include, for example: an ongoing process of reaffirming consent at various phases of a project, pre-checking materials with a small focus group, or simply building in socially acceptable ways for participants to opt out of particular studies (e.g., stop recruiting after two "I'm busy" responses). While we recognize that the research teams do not necessarily intend to behave unethically, there is a long history of colonial powers conducting research in an exploitative, "extractive" and self-serving manner that has led many indigenous communities to be highly skeptical of research. This can include acting as if ignorant of power dynamics that are part of colonial history. As the Māori indigenous scholar, Linda Tuhiwai Smith (2021), writes in the introduction to her seminal book on decolonizing methodologies: "The word itself, 'research', is probably one of the dirtiest words in the indigenous world's vocabulary. When

mentioned in many indigenous contexts, it stirs ups silence, it conjures up bad memories, it raises a smile that is knowing and distrustful."

b) Institutional approval processes

We have stressed the importance of critical and ongoing reflection of one's research practices with a team community. In most cases, there will also be formal, institutional approval processes that preceedprecede any implementation of a research project. In a global research context, these approval processes can be multilayered involving ethical review boards at one's home institutions (and possibly, collaborators institutions), national research permits, approval from educational boards (e.g., in case of school-based research), approval from local governance bodies, community leaders and so forth. Given the multilayered nature, one challenge often consists in identifying relevant bodies and authorities and to align differing procedures and demands. This is often exacerbated in contexts with informal or overlapping power structures. In these contexts, decision making power may not lay with official title holders (e.g., the president of a council) but with other parties.

Ethical review boards may not always be familiar with cross-cultural research and so any divergence from "standard" research at that institution may require additional explanation. One challenge of prior ethics review includes the need to anticipate local research conditions as accurately as possible. For example, consent forms and procedures not only have to be translated into local languages, but the overall consent procedure often needs to be modified to ensure participants are fully informed in a culturally appropriate way. This may create tension with ethical review boards that may insist on standardized forms and procedures. For example, some review boards insist on written information sheets, and signed consent. This can be harmful if, in local circumstances, it gives the impression that consent is permanent and irrevocable. Researchers may need to argue this with their internal review boards and would do well to develop an appropriate consent process with the help of the communities in which they work. Even with proper preparation and anticipation, once researchers are undertaking their projects, they may notice that their consent procedures do not fit local circumstances and may seek to amend them. Ideally, this possibility for change in procedures should be reflected in the initial ethical application to institutional review boards to establish procedures for amendments to approved procedures and processes. For example, the ethics board may consider approving a general procedure with the understanding that it would be modified in the field and presented back to the board upon return to the institution. This is in contrast to what typically occurs with researchers needing complete approval prior to embarking on data collection in remote locations.

To safeguard against ethical pitfalls in conducting (cross)cultural research, a crucial first step is to develop cultural competencies and be well-informed about the communities involved in the projects (see Broesch et al., 2020). Involving local researchers and helping to build local capacities are other important tools at hand. Whether projects will be fully participatory and in the hands of local communities or primarily involve their consultation and approval (Hudson et al., 2010) will depend on the nature of the proposed project and its likely impact. However, researchers from the Global North should be aware of the power differentials that may exist, of historical grievances and the responsibility to the communities that participate in the projects. Building diverse research teams, allowing for diverse research methodologies, and establishing internal procedures for ethical reflection (e.g., revisiting the applicability of existing procedures to diverse contexts) will all help to work towards more ethical research practices. Ethical research is a continuous process and not an endpoint.

Conclusion

In response to a growing awareness that diverse samples lead to a more robust and accurate understanding of developmental processes, more and more researchers are interested in collecting cross-cultural data. Based on our own experiences, this paper aims to provide researchers with a roadmap to conducting cross-cultural research. We structured our roadmap as a series of four questions because answers to these questions will vary based on the researcher, research program, and on the sociocultural context. While we have focused specifically on cross-cultural research, not all psychologists will collect data cross-culturally. However, because all psychologists work in a cultural context, even when working with undergraduate students, these questions are relevant to the field of developmental science as a whole.

Our positionality as researchers from, and based at institutions in, the Global North means that our guiding questions and examples reflect our research experiences and thus the power imbalances inherent to psychological research and to academia as a whole. Many of our examples also stem from studies of children from rural and/or Indigenous societies from the Global South, reflecting our own research areas. Cross-cultural variability also exists "at home", including in communities with different migration histories, or across regions. We view our roadmap as applying to these contexts as well. We also suggest that researchers begin this process by identifying "community-engaged" programs at their host institutions. Recently there has been an increasing interest in doing more community-informed and locally grounded research and universities may have additional support for this kind of research.

We would also like to elevate the work of scholars from around the world whose perspectives may be of interest to readers further interested in the practical and ethical considerations outlined above. For further information on avoiding common biases inherent to cross-cultural research, please see Medin et al. (2010), Kline et al. (2018) and Greenfield et al. (2003). For decolonial and Indigenous approaches to developmental psychology, please see Bhatia (2017), Chaudhary and Sriram (2020), Ndlovu (n.d.) and Nsamenang (1995). For more information on how Global North researchers contribute to biases in developmental psychology, please see Medin et al. (2017) and Dutra (2021). For more on how researchers from the Global North can more equitably share resources with colleagues from the Global South, see Onie (2020) and Urassa et al. (2021). Please see Bernard (2011) for additional information on field methods, and Broesch et al. (2020) for field-based ethical considerations. For more information on best practices for working with children from ethnic minorities in the Global North, see Rowley and Camacho (2015).

While our roadmap questions have been geared towards researchers themselves, the questions posed are also applicable to grant reviewers, manuscript reviewers, and editors. Indeed, these should request or require authors to make explicit the rationale for the sampling procedure and discuss how their results might vary in a different cultural context. While it is not uncommon for reviewers to ask for researchers to add conditions to their experiments in order to rule out potential confounding variables, reviewers should be mindful that additional experiments may not be logistically or financially viable in cross-cultural studies. Reporting on the socio-cultural characteristics of samples should be standard for developmental research and is already mandated by some journals in the field (e.g., Child Development).

More generally, theoretically grounded cross-cultural research using various methods will necessarily take longer than conducting experiments in a lab setting. Reviewers, promoters, hiring committee members, tenure and promotion committee members, and supervisors, should be mindful that the pace of publication for cross-cultural vs. lab-based studies will be slower.

The same pressures that have produced the replication crisis—publish (well and quickly) or perish—are similar to the pressures that prevent researchers from ameliorating the sampling bias in developmental psychology. Instead, we should emphasize thoughtful, well-designed research which pairs experimental procedures with other methods of ethnographic inquiry to ensure robust and theoretically interesting results, the accurate representation of participants, and ethically rigorous research.

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