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A Unified Approach to Demographic Data Collection for Research With Young Children Across Diverse Cultures

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Culture is a key determinant of children's development both in its own right and as a measure of generalizability of developmental phenomena. Studying the role of culture in development requires information about participants' demographic backgrounds. However, both reporting and treatment of demographic data are limited and inconsistent in child development research. A barrier to reporting demographic data in a consistent fashion is that no standardized tool currently exists to collect these data. Variation in cultural expectations, family structures, and life circumstances across communities make the creation of a unifying instrument challenging. Here, we present a framework to standardize demographic reporting for early child development (birth to 3 years of age), focusing on six core sociodemographic construct categories: biological information, gestational status, health status, community of descent, caregiving environment, and socioeconomic status. For each category, we discuss potential constructs and measurement items and provide guidance for their use and adaptation to diverse contexts. These items are stored in an open repository of context-adapted questionnaires that provide a consistent approach to obtaining and reporting demographic information so that these data can be archived and shared in a more standardized format.

Public Significance Statement
The public significance of this work is to facilitate identification and diversification of samples within developmental psychology by providing a framework for capturing demographic diversity.

Keywords: demographics, infancy, diversity

Human behavior is deeply embedded in a sociocultural context (Arnett, 2009; Henrich et al., 2010; Rozin, 2006). Even seemingly basic developmental processes, evident in young infants, vary significantly across cultures (Nielsen & Haun, 2016). For example, infants from different cultural contexts differ in how they attach to caregivers (Keller, 2018), when and how they learn to walk (Adolph & Hoch, 2019), and what they say when they begin to talk (Frank et al., 2021; Tardif et al., 2008). Human development from its inception, therefore, reflects the process of enculturation and cannot be isolated from the context in which it is expressed (Dahl, 2017).

In spite of clear evidence that behaviors in both naturalistic and experimental situations are influenced by daily lived experience (see Rogoff et al., 2018), demographic information about children in relation to their sociocultural context is often notably absent from the research record (Singh et al., 2023). At the same time, reporting requirements increasingly mandate the provision of demographic information (e.g., Roisman, 2021). It is therefore becoming more important to create standards for the systematic collection of demographic data. The purpose of the current article is to address these important issues by providing investigators with a framework to guide the collection of basic demographic information in studies of early child development. We focus here on collecting demographic data from research participants from birth to 3 years of age.

There are major gaps in our knowledge about demographic information of participants in research at this early stage of development. A detailed analysis of over 1,600 empirical articles sampling approximately 1 million participants, published with typically developing young children (birth to 30 months) over a 12-year period (2011–2022 inclusive) in mainstream developmental journals (*Developmental Psychology*, *Developmental Science*, *Infancy*, and *Child Development*), revealed that the majority of studies did not provide information about the race/ethnicity, socioeconomic status (SES), and even site of data collection of participants (Singh & Rajendra, 2023; Singh et al., 2023). Over time, there was no noticeable increase in provision of demographic data in spite of increasing concerns about a lack of sociodemographic diversity in developmental research. The majority of studies that did report demographic data collected data from White participants, a trend which remained stable over the 12-year window. In addition, the vast majority of data was collected in North America and Western Europe (Figure 1). This finding suggests that we know relatively little about the sociodemographic characteristics of developmental samples, and what we do know reflects a strong imbalance in participant representation.

We provide three primary reasons to collect and report demographic data. First, demographic data are critical to our understanding of generalizability of research data. Findings from research on early childhood have been used to drive and support very broad theories of innateness, universality of human behavior, and the initial state of psychological organization (Simion & Butterworth, 1998; see also Sameroff, 2010). Broad generalization is further compounded by the fact that sample sizes in early childhood research are often small (Oakes, 2017) and demographically homogeneous (Singh et al., 2023). The practice of broad generalization from narrow sampling, without consideration of sociodemographic details or cultural context, may contribute significantly to the lack of replicability and stability in basic findings in developmental research (Bergmann et al., 2018; Davis-Kean & Ellis, 2019). A cumulative, generalizable, and replicable science requires that sample characteristics which may modulate and contextualize young children's behaviors are clearly defined and reported.

Second, major models and theories in developmental science emphasize the importance of contextual effects in child development. We

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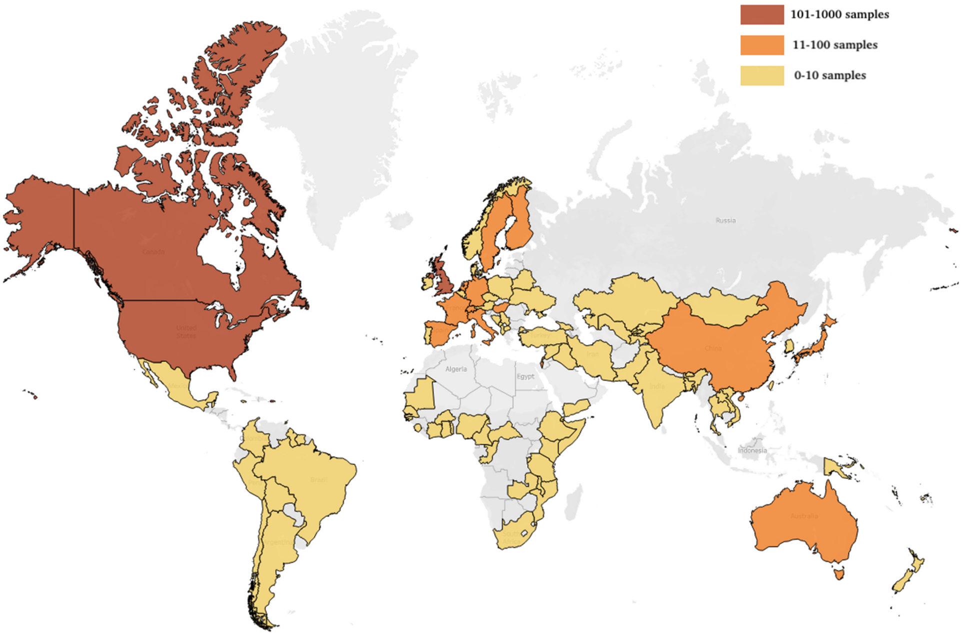
Figure 1

Number of Studies by World Region From Published Studies on Infant Development in Child Development, Developmental Psychology, Developmental Science, and Infancy (2011–2022 Inclusive)



Note. Adapted from “Diversity and Representation in Infant Research: Barriers and Bridges Toward a Globalized Science of Infant Development,” by L. Singh, A. Cristia, L. B. Karasik, S. J. Rajendra, and L. M. Oakes, 2023, *Infancy*, *28*(4), p. 715 (https://doi.org/10.1111/infa.12545). CC BY 4.0. See the online article for the color version of this figure.

provide three examples here. The bioecological model (Bronfenbrenner & Morris, 2006) suggests that child development is embedded in a series of nested systems, emphasizing the importance of characterizing children’s behavior in the context of their multiple overlapping communities and caregiving environments. Similarly, García Coll et al.’s (1996) Integrative Model of Child Development situates child development processes and outcomes within social structures of race, ethnicity, and class. This model is predicated on a wealth of evidence that children’s “social address” orients them to particular experiences that influence many core aspects of development. Finally, Spencer’s Phenomenological Variant of Ecological Systems Theory defines children’s experiences in relation to their developmental processes and outcomes in terms of an individualized risk-to-asset ratio (Spencer et al., 1997). This ratio—and an individual’s response to it—is reported to be integral to development at an individual level. Despite these theoretical emphases on environmental impact on development, the typical single-site developmental experiment cannot adequately analyze or even consider such environmental influences. To the extent that such analyses are possible, the relative absence of demographic reporting or of sociocultural context preempts any opportunity to examine environmental effects on behavior. Such analyses are made possible by examining accumulated evidence across different contexts (e.g., House et al., 2013). For these analyses to be possible and for models of development to be evaluated against available evidence, provision of sociodemographic variation is of critical importance.

Finally, provision of sociodemographic data is increasingly important for ongoing efforts to broaden participant representation. As famously illustrated by Henrich et al. (2010; see also Arnett, 2009; Graham, 1992; Rozin, 2006), psychological processes attested in 90% of samples are drawn from 7% of the global population. Developmental researchers now confront a similar reckoning due to narrow representation in child development research (Legare, 2017; Moriguchi, 2022; Nielsen et al., 2017; Singh et al., 2023). Tracking and addressing this issue require transparency about the samples that are being reported on which, furthermore, must be integrated into our interpretation of scientific findings (Ijzerman et al., 2021). Accordingly, some journals (e.g., *Child Development*, *Developmental Psychology*, *Developmental Science*, and *Infant and Child Development*) now require some sociodemographic details regardless of whether they are relevant to the research hypotheses. There is a growing awareness that demographic details are not only important to report; they have interpretative value and constrain our analyses of research data. Moving toward a more global science requires us to know not only *what* we are studying, but *who* we are studying.

Despite these reasons to collect demographic information, one potential barrier is that no standardized instrument currently exists to capture these details. Rather, individual laboratories rely on their own judgment about what demographic constructs to query. Yet, consistency across labs in collecting demographic information increases both the primary value of these data sets and their value for reuse, facilitating a more cumulative science (Roisman, 2021). In particular, the greater emphasis on large-scale international collaborations and consortia (e.g., ManyBabies and the Psychological Science Accelerator; Frank et al., 2017; Moshontz et al., 2018) necessitates consistent practices for capturing demographic data. Thus, aggregating across diverse sites would be facilitated by a standard approach to collecting demographic data.

In this article, we develop guidance for collecting sociodemographic data in research on early childhood (birth to 3 years). We present (a) a standard set of categories of information to be collected by developmental researchers, (b) a set of suggested constructs subsumed under these categories, and (c) guidelines for developing specific items related to these constructs and categories.

At the outset, we acknowledge three important limitations. First, our framework is not all-encompassing. Our priority was to inform the expedient collection of basic demographic information. We define the lowest common denominator: demographic characteristics that should be reported at a minimum even if no others are collected. Second, our goal in identifying demographic constructs was to accurately report on sample characteristics rather than to define exclusion criteria or specify subgroups (e.g., separation of samples into monolingual vs. bilingual children). To accomplish these goals, individual labs will likely need to ask context- and construct-specific questions that refer to particular exclusion or grouping criteria. Finally, instead of providing a ready-to-use questionnaire, we provide a framework for creating multiple tools across diverse contexts and goals. The reason we focus on providing a framework is that—after early attempts toward creating a single tool—we have become skeptical that a tool can be created that will be truly independent of specific cultural lenses. Our framework provides guidelines and considerations that enable the creation of questionnaires that appropriate to the local context—while aiming for maximal standardization in the constructs that are being measured. We discuss data harmonization and aggregation, providing key points for consideration in a later section.

Principles for Demographic Construct Selection

In the process of developing our set of demographic constructs, we were guided by four principles: importance, inclusivity, flexibility, and cumulativity. First, in developing a set of key constructs, we sought constructs that are theorized to be important in children's development from birth to 3 years based on available evidence. We, therefore, developed categories and suggested constructs appropriate for studies with young children. Here, we acknowledge that our collective understanding of the importance of specific demographic variables is likely underdeveloped given the rarity with which demographic variables are reported (Singh & Rajendra, 2023; Singh et al., 2023). It is likely that in many instances we simply do not know which factors are relevant to behavior given the lack of reporting. In addition, the evidence that exists, like much of the developmental research record, originates from limited world regions. Hence, our framework relies on evidence available to date, but it is expected that as researchers more routinely collect demographic data, there will be an opportunity to examine and revise which demographic variables explain behavioral variation in context.

Second, we prioritized global inclusivity, attempting to create a framework that is adaptable to a broad range of contexts. We intentionally assembled a global, multidisciplinary team of 24 researchers from nine countries distributed over four continents. Within the author group, there was citizenship representation from 15 countries, with the majority of authors (71%) being non-U.S. citizens. The authors were born in 13 different countries and are currently living in 11 different countries; 70% currently live outside the United States. The author group conducts research in a total of 27 different countries and only one researcher is working with samples exclusively within the United States. The authors named 23 different countries and/or cultures with which they have significant familiarity, and 83% reported being highly familiar with non-U.S. countries/cultures. In terms of racial diversity, the author group consists of researchers who self-reported as being from six different racial categories and 14 different ethnic categories (variously defined as cultural identification, region of origin, and tribal affiliation). This diversity was particularly instrumental for suggesting guidelines around specific constructs where there are stark cross-cultural differences in how acceptable it is to collect these data and in what form these constructs can be queried.

Third, we prioritized flexibility. Acknowledging that there is no "one-size-fits-all" solution for demographic data collection, we underscore the need for flexibility in how categories are converted to constructs and in turn, in how constructs are converted to individual items. Flexibility of constructs and of items within the framework is incorporated into the framework in order to maximize face validity without compromising construct validity (see Cronbach & Meehl, 1955; Haynes et al., 1995). Rather than formulating specific items, we have provided a framework and guidelines to develop locally adapted items. The consequence of this decision is that in order to integrate data across settings, substantial harmonization will be required to generate a common set of response categories across settings.

Finally, we prioritized cumulativity: Our framework and the questionnaires that emerge from it will only be strengthened by continuous use, revision, evaluation, and refinement by researchers. In alignment with Findable, Accessible, Interoperable, and Reusable (FAIR) principles (Wilkinson et al., 2016), we house the local adaptations in an open-source repository (https://osf.io/nqc92) on the Open Science Framework, an online platform maintained and operated by the Center for Open Science (COS; Singh, Barokova, et al., 2023). COS is supported by a preservation fund that at current levels guarantees at least 50+ years of access for all hosted materials. This repository will be maintained by Leher Singh and appointed members of the ManyBabies collaborative. We encourage widespread adaptation of a range of different cultural settings and support sharing of adaptations to the repository for further reuse.

Collaborative Model

The project began with a call for collaboration advertised through the ManyBabies listserv and through word of mouth. Participation across all career levels and from underrepresented settings was encouraged. Of those who expressed interest, a series of planning meetings were arranged for those who chose to serve in leadership roles. This core planning group (a) collaborated in developing the aforementioned principles; (b) developed the range of demographic categories: biographical information, caregiving environment (including language use), community of descent, gestational age, health status, and SES; and (c) planned the project stages and timeline.

After the series of planning meetings, a second call was published on the ManyBabies listserv to solicit members of working groups who would address one of the six demographic categories. Each working group was led/coled by a member of the core planning group. Working groups were led by researchers originating from and/or working in Bulgaria, Canada, China, Colombia, Ghana, Singapore, and the United States. Each group reviewed the literature on their respective topic, drafted and discussed relevant categories of information, and wrote a rationale for including the specific demographic category, guidance for formulating items, limitations, and key considerations. The groups met regularly to discuss progress and provide feedback on materials drafted. Following this, the core group leaders convened regularly to discuss their sections and collaborated on the refinement and revision of each section. The project began in February 2021 and concluded in April 2023.

Key Constructs

We next review the key categories and constructs that we recommend investigators query (see Figure 2 for a summary) and provide our rationale for each category. In keeping with the principles outlined above, we recognize that different contexts—cultural, regional, and even methodological (e.g., collecting data in highly controlled laboratory settings vs. more naturalistic settings such as the home or in the field)—provide different allowances for demographic data collection. It is therefore possible that individual researchers may further condense the recommended constructs for collecting demographic data in a more expedient fashion. Examples of brief (abridged) versus full forms of demographic questionnaires are available at https://osf.io/nqc92/?view_only=de82cb2b462b406e93182ba2a5c7e207.

Biographical Information

Rationale

Biographical information about caregivers and children is required to define the sample and situate participants in a cultural context. We propose basic constructs that are aligned with current standard reporting requirements of developmental journals.

Specific Constructs

The biographical constructs we recommend querying in all contexts are the child's age and sex (assignment at birth). Given privacy considerations around storing and sharing dates of birth, we recommend computing age in months and days at the point of testing by asking for date of birth, computing age in months and days, and then deleting dates of birth.[1] We recommend asking about sex assignment at birth in order to facilitate data collection as this information may be easily identified.[2] Here, we encourage the inclusion of an "other" option to allow for a nonbinary report (e.g., intersex).

We also recommend querying places of origin of the participant. This can be instantiated via city (or town, village, or other contextually appropriate unit) and country of birth in order to situate participant data within its geographical context. To this end, we recommend querying city and country of current residence as a separate item. This can be helpful in describing the migration history of the participant. As discussed later, in settings where the provision of race and ethnicity as markers of community of descent may be challenging to obtain (e.g., France; Germany), migration history may provide some insight into participants' communities of descent and into their lived experience (Fenton, 2013; Williams, 1996). For these reasons, we recommend querying similar information (city/country of birth; city/country of residence) about the child's caregivers.

Based on differences in caregiving structures, we provide guidance on defining caregivers. Although in data collection, some researchers may choose to use the term "parent," the construct of interest is the focus on caregivers "tasked with responsibilities for providing for children's health and safety, cognitive stimulation, affection, and behavioral socialization so that children develop the characteristics needed to be well-adjusted members of their cultural group" (Lansford & Bornstein, 2020). In many households, caregivers may be biological or adoptive parents and in others, parenting roles may be performed by other family and nonfamily members (Sear, 2016). In many contexts, children do not have a single adult primary caregiver (Keller, 2018). We, therefore, encourage a broad and culturally adapted definition of caregiving to allow for the vast structural variation in care networks that exists across countries (Keller & Chaudhary, 2017).

Gestational Status

Rationale

Information about gestational status is important to characterize participant samples in terms of fetal growth, which is associated with variation in child outcomes. Premature birth generally puts the infant at high risk of postnatal complications, developmental concerns, and death. Premature birth has widespread implications for infant development (for a review, see Rose et al., 2008).

The World Health Organization (WHO) defines preterm children as those born before 37 weeks of pregnancy and differentiates between different degrees of prematurity: moderate to late preterm (32–37 weeks), very preterm (28–32 weeks), and extremely preterm (less than 28 weeks; World Health Organization, 2022). The WHO also reports that globally, more than 10% of all babies are born preterm with the majority of preterm births (60%) occurring in Africa and South Asia, which motivates the collection of gestational age data in single-site studies, but also in cross-country studies (Blencowe et al., 2012).

Specific Constructs

The two constructs we recommend as proxies of gestational status are gestational age and birth weight. Gestational age is often characterized by children's birth date in relation to their due date. There is considerable variation in how gestational age is computed worldwide. In the United States, due dates are typically determined based on a dating ultrasound scan performed in the first trimester or based on the last menstrual period (e.g., Nakasone et al., 2021; Schlapbach et al., 2012). However, measures of gestational age can also be based on abdominal circumference and/or fetal weight estimates (Chang et al., 1992). The specific measure used in any given context may vary based on medical practices, socioeconomic factors, and access to medical technology. We, therefore, recommend providing respondents with specific examples of local conventions around the determination of gestational age, if needed to facilitate retrieval of this information, that are aligned with cultural practices at the site of testing.

The other construct under gestational status is birth weight. The WHO defines small for gestational age as a low birth weight of less than 2,500 g at birth, regardless of gestational age (World

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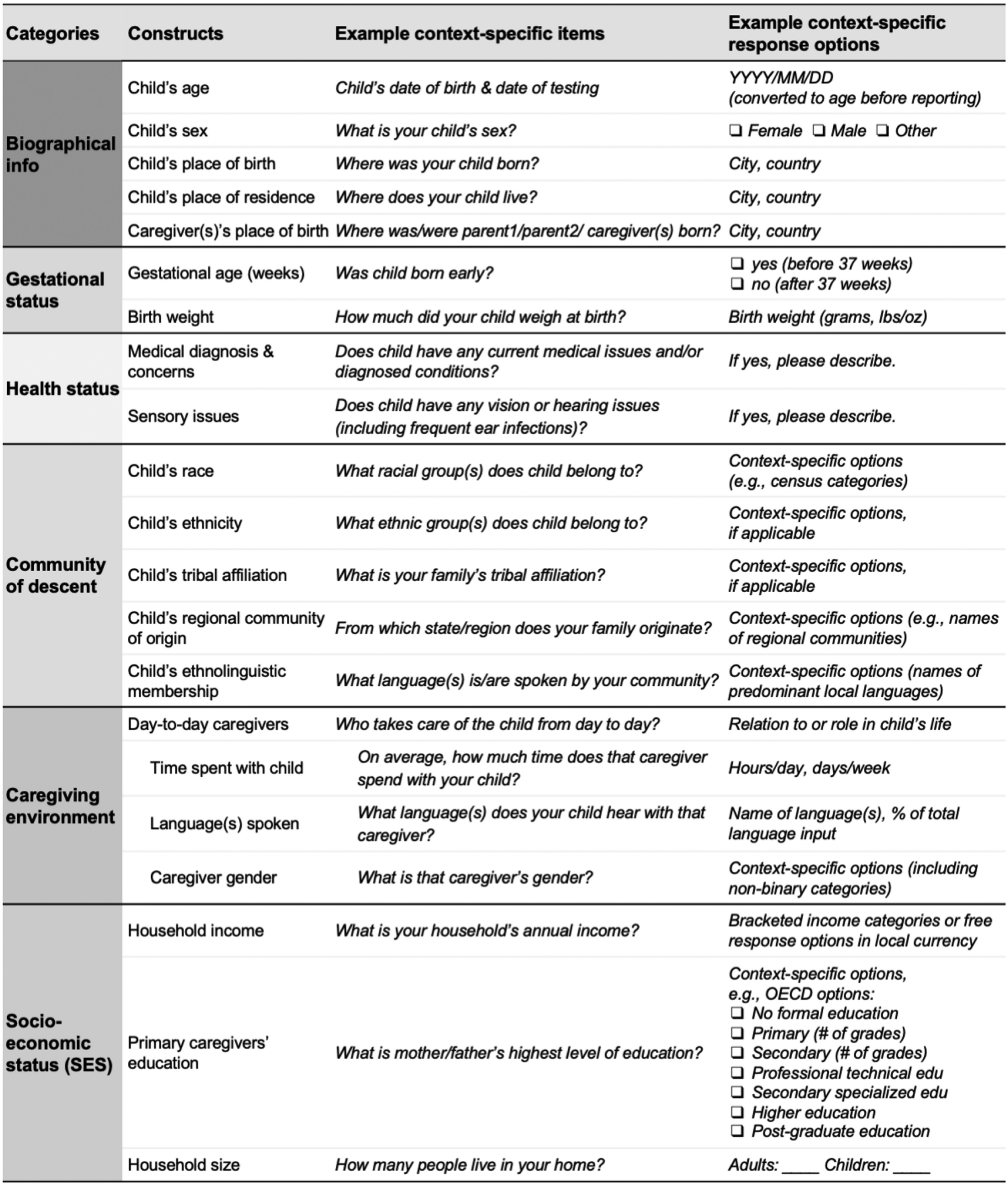
[1] There are many freely available tools to facilitate this conversion (e.g., https://www.calculator.net/age-calculator.html).

[2] Although we ask about parent gender identification, current research typically examines changes in gender identification starting at 3 years of age, beyond the age range that we focus on here (Olson et al., 2016). Thus, we focus on child's sex at birth as the target construct, recognizing that the question text and response options instantiating this construct will likely vary between communities.

Figure 2

A Summary of Categories and Constructs With Examples of Individual Items



Categories	Constructs	Example context-specific items	Example context-specific response options
Biographical info	Child's age	*Child's date of birth & date of testing*	*YYYY/MM/DD* *(converted to age before reporting)*
	Child's sex	*What is your child's sex?*	*☐ Female ☐ Male ☐ Other*
	Child's place of birth	*Where was your child born?*	*City, country*
	Child's place of residence	*Where does your child live?*	*City, country*
	Caregiver(s)'s place of birth	*Where was/were parent1/parent2/ caregiver(s) born?*	*City, country*
Gestational status	Gestational age (weeks)	*Was child born early?*	*☐ yes (before 37 weeks)* *☐ no (after 37 weeks)*
	Birth weight	*How much did your child weigh at birth?*	*Birth weight (grams, lbs/oz)*
Health status	Medical diagnosis & concerns	*Does child have any current medical issues and/or diagnosed conditions?*	*If yes, please describe.*
	Sensory issues	*Does child have any vision or hearing issues (including frequent ear infections)?*	*If yes, please describe.*
Community of descent	Child's race	*What racial group(s) does child belong to?*	*Context-specific options (e.g., census categories)*
	Child's ethnicity	*What ethnic group(s) does child belong to?*	*Context-specific options, if applicable*
	Child's tribal affiliation	*What is your family's tribal affiliation?*	*Context-specific options, if applicable*
	Child's regional community of origin	*From which state/region does your family originate?*	*Context-specific options (e.g., names of regional communities)*
	Child's ethnolinguistic membership	*What language(s) is/are spoken by your community?*	*Context-specific options (names of predominant local languages)*
Caregiving environment	Day-to-day caregivers	*Who takes care of the child from day to day?*	*Relation to or role in child's life*
	Time spent with child	*On average, how much time does that caregiver spend with your child?*	*Hours/day, days/week*
	Language(s) spoken	*What language(s) does your child hear with that caregiver?*	*Name of language(s), % of total language input*
	Caregiver gender	*What is that caregiver's gender?*	*Context-specific options (including non-binary categories)*
Socio-economic status (SES)	Household income	*What is your household's annual income?*	*Bracketed income categories or free response options in local currency*
	Primary caregivers' education	*What is mother/father's highest level of education?*	*Context-specific options, e.g., OECD options:* *☐ No formal education* *☐ Primary (# of grades)* *☐ Secondary (# of grades)* *☐ Professional technical edu* *☐ Secondary specialized edu* *☐ Higher education* *☐ Post-graduate education*
	Household size	*How many people live in your home?*	*Adults: ____ Children: ____*

Note. Example items and response options are for illustrative purposes and will necessarily vary by context. Not all constructs/items will be appropriate/applicable for all contexts. OECD = Organisation for Economic Co-operation and Development.

Health Organization, 2014). Although premature birth is directly correlated with lower birth weight (see Fenton & Kim, 2013 for growth charts for preterm infants), low birth weight has been used as an independent measure of infant health. Similar to premature infants, full-term infants can have low birthweight, which is associated with later developmental delays and disruptions to growth and metabolism (e.g., Saenger et al., 2007). Collecting both gestational age and birth weight data, therefore, ensures that the gestational status of the participant sample is more accurately captured than via gestational age or birth weight alone.

Health Status

Rationale

Health-related variables are an important part of demographic characterization and can also be useful for inclusion/exclusion. For example, knowledge of participants' medical conditions and/or developmental disorders are important in understanding and reporting on their behaviors. This knowledge may derive from formal clinical diagnoses. Alternatively, in low-resource contexts where clinical diagnostic tools may be less available and/or less commonly used, reliance on expressions of concern by relatives and friends may be more common (Eales et al., 2020).

Specific Constructs

The specific conditions that researchers may be concerned with depend on the research goals and target sample. In addition, their elicitation may be more or less appropriate for particular contexts and populations. Researchers may query medical diagnoses that impact early development to characterize particular medical conditions within the sample and/or to link these conditions to behavior. In addition, given the reliance on visual and auditory perception in infant laboratory research, sensory issues (e.g., visual and/or auditory impairments or sensitivities) are likely to be particularly relevant both inside and outside of the laboratory (Eeles et al., 2013).

The health status construct is sufficiently broad such that it can be queried in multiple ways. If a parent reports a developmental concern, we recommend asking about the details of the suspected concern(s). Different cultures might have different norms for what is considered a concern about the child's development and/or for information that might be considered stigmatizing and thus not likely to be shared during a research study. In addition, what may be a developmental concern in one environment may not be in another even with respect to basic milestones (e.g., Karasik & Robinson, 2022). It is therefore critical to work with community partners and local informants to be apprised of beliefs and expectations of developmental normativity in developing specific phrasing to assess this construct and in identifying behaviors that are construed as normative versus atypical.

Community of Descent

Rationale

Community of descent is a broad category of information under which multiple aspects of heritage and identity are subsumed, including but not limited to ancestry, race/ethnicity, religion, national origin, cultural practices, and native language use, among others. In disaggregating this broad construct, we encourage researchers to consider aspects of community of descent that are most relevant and influential in their individual contexts. There are myriad ways in which community of descent can be operationalized; doing so requires careful determination of the best proxies within a particular context. Here, we note that race/ethnicity are standardly recommended in U.S. developmental journals as markers of community of descent. However, these markers may not be equally or at all relevant on a global scale. Moreover, existing classification schemes commonly used in U.S.-based developmental journals are heavily centered around U.S. classification schemes (Singh et al., 2023). U.S.-based race/ethnicity categorization systems may not be appropriate globally and may overaggregate sources of variation in community of descent (e.g., the use of the category "Asian" to encompass those originating from a large, multiracial, and multiethnic continent). Moreover, as discussed below, other markers of community of descent may be more appropriate outside of the U.S.

Given the emphasis on providing data on race/ethnicity in U.S.-based developmental journals,[3] we now devote some discussion to race/ethnicity as markers of community of descent as one example and then turn to alternative markers. At the outset, we note that race is a social—not biological—construct (see statement of the American Anthropological Association, 1998) and there is little evidence to support biological variation between racial groups that exceeds the variation within groups (see Mountain & Risch, 2004). That said, observable physical correlates of race can shape the lived experience of participants (Feliciano, 2016). Ethnicity, although often less observable than race, also shapes individuals' psychological experiences (Markus, 2008). The definition of ethnicity suffers from a lack of consensus around its meaning (see Agyemang et al., 2005 for a discussion of this issue). Both race and ethnicity refer to a group of people who share common social characteristics (e.g., culture, history, or language) or physical characteristics and phenotypes. Thus, children's racial and ethnic origins are tied into many aspects of their early development, such as caregiving practices, healthcare practices, family structure, SES, and biological development (Garcia Coll, 1990). Both race and ethnicity reveal information about participants' community of descent (Hollinger, 1998).

The difference between race and ethnicity is highly variable across cultures. For example, in many ethnicity surveys in the United States, two choices are provided: Hispanic or non-Hispanic, despite the diversity within these categories. In other societies, ethnicity and race are nondistinct categories. For example, in Malaysia, ethnic divisions developed by the government are Malay, Chinese, Indian, and Other (Hirschman, 1987). The very same categories in neighboring Singapore are classified as racial—and not ethnic—divisions (Rocha & Yeoh, 2022). Moreover, the interpretation of the same racial category can shift over time (see Yeoh et al., 2016 for the changing interpretation of "Eurasian" in postcolonial Singapore). These examples provide some indication of the highly variable nature of how race and ethnicity are defined across different contexts and time periods. We, therefore, encourage researchers to adopt measures of community of descent and corresponding response categories that have contemporary validity within the local context.

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[3] For instance, *Child Development* requires inclusion of "the theoretically relevant characteristics of the particular sample studied, for example, but not limited to: race/ethnicity, socioeconomic status, language, sexual orientation, gender identity (inclusive of non-binary options), religion, generation, family characteristics; and the place(s) from which that sample was drawn, including country, region, city, neighborhood, school, etc. and all other context variables that are relevant to the focus of the publication." *Developmental Psychology* states, "Major demographic characteristics should be reported, such as sex, age, socioeconomic status, race/ethnicity, and, when possible and appropriate, disability status and sexual orientation." *Developmental Science* requires the provision of ethnicity/race and sex/gender.

Finally, collecting data about participants' race and/or ethnicity can be controversial. In some countries, such as France, it is illegal to ask about these demographic characteristics (Léonard, 2014). In other societies, such as Brazil, Croatia, Hungary, and Slovenia, it is legal to collect information about race and ethnicity, but it is considered sensitive data (Morning, 2015). We again emphasize that race and ethnicity may not be the most fitting markers of community of descent in many societies. No matter the measure used, we encourage sensitivity around querying community of descent and suggest indicating to participants that any items probing this construct are optional.

Specific Constructs

In defining specific constructs for community of descent, we emphasize the basic importance of self-disclosure and dissuade researchers from categorizing participants themselves. We encourage the use of inclusive and context-appropriate categories. No matter the categories used, we encourage minimizing the use of "Other" in order to maximize precision of demographic data. The specific items used should be evaluated for their information value within a particular context. As discussed above, researchers may choose to use race and/or ethnicity if appropriate and informative in context. In some settings, measures for community of descent may include migration history of the family (Parameshwaran & Engzell, 2015), adherence to cultural or religious routines and practices (Juang & Syed, 2010), and/or other behavioral measures of enculturation (Kim & Abreu, 2001). In indigenous populations, tribal affiliation or clan membership may be suitable markers (Posner, 2007). Alternative and/or complementary measures include membership within an ethnolinguistic community, which can be queried by asking about the native language within the community (Adams et al., 2016). Lastly, in some environments, such as the South Asian subcontinent, regional origin and/or religion may be valid proxies of community of descent (Eriksen, 2001). We reiterate that this overall category of information may be considered sensitive data and care should be exercised in developing and administering questions around community of descent.

Caregiving Environment

Rationale

Caregivers, both parental and nonparental, are key agents of socialization for young children (Bohr et al., 2018). Information about a child's caregiving environment provides insight into the individuals that support and nurture the child. As mentioned earlier, we note the enormous complexity in both identifying individual caregivers and in defining care, given that these constructs vary considerably across sociocultural contexts. In most of the world, multiple parenting (or alloparenting) of different forms is the norm (Gauvain & Parke, 2010). As such, it should not be presumed that primary caregivers include or are limited to children's biological parents or family members, and it should not be presumed that a child has only one to two caregivers. Caregiving arrangements are also highly variable across sociocultural contexts in terms of the roles performed by caregivers. In querying this construct, we encourage researchers to provide locally adapted examples of caregiving behaviors that would guide participants' responses.

In their role as agents of socialization, caregivers are also key sources of language input. For this reason, we have incorporated language input under caregiver information to avoid duplicate querying of caregiver information. Infants' language exposure has developmental significance: the number of languages that children hear has been shown to influence the pace and course of language development (Floccia et al., 2018; Singh, Cheng, et al., 2022) as well as a range of nonlinguistic processes in early childhood (Brito & Barr, 2012; Kovács & Mehler, 2009a, 2009b; Liu & Kager, 2016; Sebastián-Gallés et al., 2012; Singh et al., 2015). Furthermore, in multilingual children, the amount of relative exposure to each language is predictive of their linguistic knowledge in that language (Blom, 2010; Gathercole, 2002; Hoff et al., 2012; Unsworth, 2013). Given that we focus on early childhood, we encourage parental estimates of language exposure as a means to capture the participant's language environment. Parent estimates of these aspects of language exposure have been shown to correlate with direct measures of input (e.g., Marchman et al., 2017; Orena et al., 2020), although this evidence draws largely from North America. We encourage researchers to think critically about normative input structure in context (e.g., directly input vs. overheard speech) and to determine what counts as language exposure within context (Cristia et al., 2023).

Specific Constructs

We recommend querying who takes care of the child on a regular basis, their relationship to the child, the amount of time they spend with the child, and the names of the specific language(s) they speak to the child or in the presence of the child (whichever is appropriate). From the names of languages, the number of languages can be extrapolated. We also suggest querying both the names and number of languages spoken because membership in a linguistic community/communities can be an important indicator of heritage and sociocultural identity (Ting-Toomey & Dorjee, 2014). We recommend caregiver gender identification as an additional variable. In querying caregiver gender, we encourage the use of inclusive response categories that align with gender categorization systems in the site of testing and encourage the provision of nonbinary options.

To estimate the amount of time spent with each caregiver, we suggest asking about hours per day and days per week instead of estimates of proportions of time. This information is likely to be more immediately accessible to families and can be retrieved simply from knowing caregivers' schedules, rather than requiring additional computation or estimation. In our experience working with diverse populations, relative quantification (e.g., percentages) is generally more difficult for individuals to compute than absolute quantification (e.g., number of hours). As such, asking participants to retrieve schedules rather than compute percentages is expected to result in a more accurate measure.

SES

Rationale

SES shapes many aspects of early child development both concurrently and longitudinally (Bradley & Corwyn, 2002; Duncan et al., 2012; Halle et al., 2009; Luo & Waite, 2005), influencing a broad swath of cognitive, academic, behavioral, and health outcomes (Letourneau et al., 2013; Noble et al., 2015; Ursache et al., 2016). SES is especially influential during the first years of life, when neurodevelopmental change is most rapid and children are highly vulnerable to environmental conditions (Nelson, 2007; Nelson &

Gabard-Durnam, 2020). Low family SES can significantly alter developmental trajectories, putting children at risk of not achieving their developmental potential (Grantham-McGregor et al., 2007; McCoy et al., 2016). However, SES also shapes child outcomes at the higher end of the socioeconomic spectrum (Milligan & Stabile, 2011; Schady et al., 2014; Votruba-Drzal, 2003). Given its wide-ranging impact, it is critical to report the SES distribution of study participants to interpret and generalize findings in developmental psychology.

Measurement of SES is complex (Singh & Rajendra, 2023). Recent analyses of Organisation for Economic Co-operation and Development (OECD) and World Bank data suggest that different components of SES are differentially related to child development depending on the setting. For example, household income has been shown to be more influential in developing countries and parental education is more influential in industrialized countries (O'Connell, 2019). We encourage use of SES measures that are appropriate to context and provide specific suggestions below.

Specific Constructs

In this section, we focus on widely-used measures of SES in developmental research: caregiver education and household income (Singh & Rajendra, 2023). However, we note that in some contexts, these measures may not accurately characterize SES. SES may be better characterized by other proxies, such as livestock ownership, home construction materials, household assets, and/or access to clean water and nutrient-dense food. We encourage researchers to select socioeconomic measures that are best suited to the local context. For the most part, research on effects of caregiver education derive from North American contexts where caregivers are most commonly defined as parents. For example, there is a rich body of literature on the associations between maternal education specifically and child outcomes in different domains of functioning (e.g., Carneiro et al., 2013; Vernon-Feagans et al., 2020; Vikram & Vanneman, 2020). However, some studies suggest that paternal education might be just as or even more influential in certain contexts (see Cabrera et al., 2007; Pancsofar & Vernon-Feagans, 2010; Singh, Yeung, et al., 2022). One approach is to query the highest level of education of all primary caregivers. While in the United States, this is often instantiated as maternal and paternal education, we encourage specificity in defining primary caregivers in a manner that is contextually appropriate. When operationalizing formal education, we recommend that researchers flexibly and appropriately use and adapt the descriptions of the educational levels based on the country where research is conducted and word items in a way that is inclusive of variability in caregiving structures.

Next, we discuss the use of household income as a proxy for SES if appropriate to context. Use of this construct is supported by a large body of data demonstrating that income has unique effects on child outcomes, independent of other household and parental characteristics (see Bastagli et al., 2019 for a review on evidence from low- and middle-income countries; Cooper & Stewart, 2021; Duncan et al., 2017 for reviews on evidence from high-income countries). For example, household income is uniquely related to neural processes underlying cognitive development (e.g., Decker et al., 2020; Hanson et al., 2013; Noble et al., 2015; St John et al., 2019). This relation is likely due to ways in which income directly affords material resources that in turn impact early development, such as access to adequate nutrition, exposure to stress and environmental pollutants, and access to physically, emotionally, and cognitively enriching environments (Farah, 2017).

When collecting data on income, research teams should decide on and document the use of either gross income or net income and should encourage the use of income from all sources. Furthermore, when assessing SES in the context of child development and academic achievement studies, it has been recommended to adjust measures based on family composition (Cowan et al., 2012). One convenient and widely employed technique to adjust income is to compute income-to-needs ratios. These are computed by summing the total family income and dividing it by the poverty threshold for a family of the same composition. The poverty threshold for different family sizes is typically obtained from the country's published census data. Therefore, in the context of cross-country comparisons, researchers are dependent on the availability of such data. Another route for comparing participants' income across countries are the Purchasing Power Parity indices provided by the World Bank. Purchasing Power Parity is a comparison of the prices of the same goods or services in different economies using the local currency units (World Bank, 2020).

Even though collecting income data can be extremely helpful in the context of characterizing participant samples and drawing within- and cross-national comparisons, the decision to use income as a measure of SES should be taken with care for three main reasons. First, income information is often considered to be sensitive. Second, in certain communities, collecting income information might not capture meaningful variability in access to material resources within the specific context. In some instances, querying household assets and using the International Wealth Index may be a more optimal choice. These decisions should be taken in consultation with local informants familiar with socioeconomic stratification within the context of testing. The third limitation associated with collecting income data is that although gross income is an objective way to assess access to material resources, it is important to consider that tax rates and cost of living can differ not only between countries, but also within countries (e.g., by state or marriage status) and may change over time, making it difficult to quantify the amount of resources a family actually has to potentially invest in their children.

Considering these limitations, one might consider collecting data on subjective social status either as a complement or as an alternative, depending on the research questions. Subjective social status is typically assessed using the MacArthur Scale of Subjective Social Status (Adler & Stewart, 2007). Subjective social status is convenient to collect and has been widely used in large-scale adult studies (e.g., Adler et al., 2008; Demakakos et al., 2008; Singh-Manoux et al., 2005; Zhao et al., 2023) showing that it is associated with health status and subjective well-being (Tan et al., 2020). It has been widely acknowledged that objective SES and subjective SES are related but distinct constructs (Adler & Stewart, 2007; Kraus et al., 2012). However, as described above, it is objective access to material resources that has been shown to predict neurocognitive development in early life (e.g., Hanson et al., 2013; Noble et al., 2015): a recent review linking SES to brain development in ages 0–5 reported no studies using subjective social status as a measure of SES (Olson et al., 2021). In addition, there are many individual and societal factors that influence the relationship between income and subjective perception of income (Gasiorowska, 2014; Kraus et al., 2012; Ravallion, 2012). In this sense, subjective social status may be even more difficult to interpret comparatively across settings than family income.

Instantiating Constructs Into Items

Taking the set of constructs above as a starting point, how should researchers go about adapting items instantiating these constructs in specific cultural contexts, and how should response options be constructed? We highlight a set of general principles: (a) keep wording simple, (b) use standardized questions when possible, and (c) consider open-ended response options. As researchers adapt our proposed framework to instantiate the constructs described here in a manner appropriate for their context, we recommend engaging in iterative piloting to ensure that there are no particular questions or response options that confuse or discomfit your participants. We also encourage researchers to submit existing questionnaires to our open repository to allow open dissemination of different adaptations.

Our recommendations are guided by a general framework for survey design that starts with the idea that research participants filling out questionnaires are "satisficing" (i.e., making "good enough" responses that balance efficiency and accuracy). We also suggest that decisions that minimize cognitive effort will yield more reliable data (Krosnick & Presser, 2010).

Keep Wording Simple

Questions should be as simple as is practical, because complex question wording can reduce data quality when participants misinterpret instructions (Wenz et al., 2021). Furthermore, complex questions can lead participants to become fatigued or upset with a survey more generally, leading to failure to complete the survey or speedy, incomplete responses (Le et al., 2021). For example, compare these two questions:

1. On average, what is the combined gross income (before taxes) of all members in your household per year? Please include all sources of income (salaries, overtime payments, pensions, freelancing, etc.).
2. What is your household's annual income from all sources?

Questions about income are sensitive in many contexts, and so a question writer might weigh the relative benefits of these two different approaches. Version (a) is far more precise, but also may require more cognitive effort and feel more intrusive to participants. In contrast, version (b) is simpler and more vague, pragmatically implicating that precision is not as important. In this instance, we recommend the second question as it allows the respondent to seek clarity if needed while conserving cognitive effort.

Use Standardized Questions

If standard questions and response options exist in the particular context of testing, we recommend they be used. While existing questions have real weaknesses—for example, the U.S. census categories for ethnicity discussed above—existing questions also have at least three advantages. First, they are familiar. They will be easily recognized by participants and will likely have been answered before, meaning that participants are less likely to misread and/or misinterpret the question. Second, the specific response choices come from an authority beyond the developer of the questionnaire, meaning that they are easy to justify to ethics boards, participants, and reviewers. Finally, they yield standardized data that are easy to harmonize across data sets and allow samples to be compared to representativeness statistics. However, we do not encourage the transfer of categories between settings without due consideration to the construct validity of these categories in each setting. For example, the use of U.S. Census categories to query race/ethnicity would be nonsensical almost anywhere else in the world.

Consider Open-Ended Response Options

Open-ended responses to survey items—in which participants write prose rather than checking a particular option—require substantially more work to tabulate; in some cases, categorization judgments can be difficult. Yet open-ended questions can have substantial value as well. For example, asking about developmental concerns via an open-ended question can often elicit information about a child's health history that is relevant for how their data are interpreted or used, but that might not have been discovered had the form simply stated, "Check this box if you have major concerns about your child's development." Open-ended questions can also be more inclusive and welcoming, inviting a participant to share rather than asking them to fit their child into predefined categories that may not perfectly fit. They also provide respondents with the ability to create their own responses—rather than needing to fit their responses into predetermined criteria—while collecting data about standardized constructs (Singer & Couper, 2017).

Form Administration

We expect that the contexts of administration for demographic forms will be as broad as the contexts of research themselves. As a result, no one approach will be appropriate for all contexts. Nevertheless, here we highlight a two choice points for administration.

First, research on early childhood varies in how in-depth the research experience is for participants. On one extreme, an increasing amount of research with young children is conducted via short interactions, for example in museums (Callanan, 2012). Some interactions are even asynchronous and mediated by a computer interface, such as online platforms like Lookit (Sheskin et al., 2020). These interactions do not afford the time needed to build up trust prior to answering sensitive questions or filling out long forms. For these contexts, we recommend constructing questionnaires that list constructs that are deemed most elemental to the context, the research questions, and the researchers' expected reporting requirements.

Second, the medium of questionnaire administration will likely shape many decisions about the design of a specific demographic instrument. For example, a questionnaire that is designed to be administered asynchronously via a web interface should contain enough instruction text to ensure that families can understand the survey. In contrast, a questionnaire designed to be administered via a telephone interview might focus on shorter questions, with further details to be provided by the interviewer during dialogue. There may also be interactions between the medium of administration and the culture of the families who participate in research. In some contexts, families will be more likely to disclose sensitive information (e.g., developmental concerns) to an interviewer who establishes trust; in other contexts, families may be more comfortable writing their income into a webform compared with saying it verbally. There is no substitute for pilot testing to reveal the most convenient and effective medium of administration for your population. Often, simply asking families how they would feel most comfortable providing this information is the best way to tailor demographic data collection to a specific context and population.

Processing Demographic Data

Once a demographic form has been developed, there are two further interrelated concerns about the data that should be addressed: (a) ensuring that data are collected, stored, and shared in an secure and ethical manner, while also (b) creating maximal value via sharing and potential reuse.

Protecting Participant Privacy

Demographic data are often sensitive. As discussed above, many "basic" descriptors from the perspective of the researcher can feel very intrusive to ask of participants. Much of the work of creating a good demographic survey happens on the front end in creating a form that balances the researcher's desire for information against the participant's comfort in disclosing particular pieces of information. But once demographic data are collected, care must be taken to protect participants' privacy as well. Researchers must navigate both ethical and regulatory frameworks.

From a legal perspective, there are specific national controls on what can be done with demographic data. In particular, several pieces of information that we advocate for collecting would be subject to regulation under U.S. and EU legal frameworks. Under the U.S. Health Insurance Portability and Accountability Act, dates of birth and diagnostic information about developmental disorders are considered Private Health Information and their storage is regulated. Under the EU's General Data Protection Regulation, race/ethnicity data join this list. Researchers should be aware of local regulations that are triggered by the collection of these data fields. For example, safeguarding procedures that apply to the collection of sensitive data must likely be followed, including use of encryption standards, controlled access to data, specific approval via the ethics process for collecting sensitive information, and transfer from portable devices to secure systems as soon as possible.

From an ethical perspective, there are two key concerns about demographic data collection. First, participants must be informed about their rights, in particular, about their right not to provide an answer to any question and—if a right to retraction of data exists (as it does in the EU, Canada, Brazil, etc.)—how they might retract their data from the study. Second, they should be informed about how and by whom their data will be used and if there are any provisions for sharing. Since we have advocated throughout for the value of sharing demographic data, we suggest that participants be informed that their demographic data may be shared publicly with other researchers in a deidentified form, which might be used for analysis relating to demographic variation in children's development. This extra transparency will allow respondents who are uncomfortable with such reuse of their data to opt out of sharing.

Deidentification can be a complex process. At the outset, as scientific data become more open, methods for deidentification of demographic data are coevolving with the best practices of open data requirements. For example, publicly accessible data could collapse specific items into superordinate categories (e.g., urban vs. rural). Within individual requirements around the ethics of data use, more specific data could be shared.

Researchers should consult with local authorities and ethics boards to find out the best practices at their institution—for example, in the United States, the Department of Health and Human Services publishes a "Safe Harbor" standard list of identifiers that can be removed from data for it to be considered deidentified. Even though following such standards may satisfy a researcher's legal responsibilities, there may be further risks, however. In particular, statistical reidentifiability refers to the notion that the conjunction of individually innocent fields may uniquely pick out a single person in certain cases (e.g., De Montjoye et al., 2015). For example, a rare race/ethnicity combination can uniquely pick out a particular person in a small group (but less so in a large group). These concerns are especially salient when researchers are working in smaller communities or populations (e.g., children with a rare developmental disorder). One method in use is to exchange small cell numbers, though this can have implications for analysis (Duke-Williams & Stillwell, 2007). When in doubt, the best course should always be to consult with local ethics boards or relevant regulatory bodies.

Data Coding

Our hope is that researchers collect data on our recommended constructs and that they both report these data in summary and share their demographic data together with their research data with the broader research community as FAIR data via depositing them in an appropriate repository (Wilkinson et al., 2016). Because demographic forms will differ from site to site, data will not be identical in format or content. However, following a small number of best practices will mean that meta-researchers in the future will be able to harmonize data efficiently. First, researchers should choose easily accessible data formats such as comma separated value for data storage, following best practices for tabular data formatting (Broman & Woo, 2018). Second, researchers should provide a codebook: a document describing the contents of each column of the demographic data file and listing possible values, any abbreviations (e.g., "M = male"), and conventions for missing data (e.g., NA, NULL). Third, if open-ended fields are used, researchers should provide details of how responses were coded and categorized, when appropriate providing both the full transcribed answer and the specific category it is assigned to.

Reuse of Demographic Data: Key Considerations

We have advocated here for the consistent collection and sharing of sociodemographic data for studies of early childhood, and we believe that these practices are important for moving developmental research forward. But we acknowledge that there are some potential ethical risks associated with open sharing of sociodemographic information—in particular, the risk that these data will be misused or misinterpreted in analyses of demographic variation in behavior, as has happened in the literature on intelligence as an example (e.g., Clark et al., 2020). On the balance, our belief is that the response to the potential for misuse should not be to avoid collecting such data at all. Instead, we should seek to use sociodemographic information responsibly, building appropriate and valid theories of sources of developmental variation. Such theories should inoculate the community and the literature against misinformation by providing scientifically grounded responses to unfounded claims about variation.

Nevertheless, we acknowledge that not all investigators will share our attitudes, especially in cases where the primary behavior being studied might be especially sensitive from the perspective of demographic reanalysis. In such cases, we encourage investigators to use our framework to gather sociodemographic information, but to consider pursuing several intermediate transparency options. The first is simply to publish general sample composition statistics without releasing demographic data at an individual level. A second is to share individual demographic data for their sample but unlinked to behavioral measures at the individual level. A third possibility is to provide tables of results disaggregated by key demographic variables. For example, in medical and social science research contexts, the importance of disaggregating data by sex has been emphasized (see Hussain et al., 2022). Each of these options accomplishes the broader goal of greater sample characterization, while avoiding some of the potential risks in data reuse.

Positionality Statement

As noted above, this project involved the participation of 24 early childhood researchers who were born in 13 and living in 11 different countries, from six different races and 14 different ethnicities, who had significant cultural familiarity with 23 countries and research experience in 27 countries. From the inception of the project, we aimed for a diverse composition of our research group to develop a framework that was inclusive, versatile, and adaptable to the diversity of environments within which infants are raised. Within these bounds of representation, we have provided some core constructs that serve as our vision of the "lowest common denominator" of demographic variation with the clear acknowledgment that this vision represents the perspective of a limited group of researchers. It is our hope that other researchers, from diverse settings, will use and adapt the framework for broader usage and that from these efforts will emerge multiple variations of demographic data collection. Hence, this framework reflects a starting point and not the final word on how demographic data should be collected in developmental research.

Future Directions

This undertaking emerged from ManyBabies initiative (Frank et al., 2017; ManyBabies Consortium, 2020), a global network of infancy researchers working to test the replicability of seminal research findings at a large scale, develop best practices in data collection, aggregation, and analysis across diverse settings, and increase the global diversity of researchers and research participants. As researchers working on a global scale, it became clear that existing demographic approaches were not sufficient to our needs to report the demographic characteristics of our samples in a robust and comparable way across laboratories around the world. As stated at the outset, our initial, ambitious goal was to create a single, standardized questionnaire that could be broadly used across populations. In developing this tool, it became apparent that this was simply not feasible due to substantial variation in how demographic categories and constructs are instantiated across settings. In converging on a set of demographic constructs and categories, the onus lies on the researcher(s) to determine how best to aggregate responses across settings given that items may differ for each setting. Therefore, an important next step is to establish practices for cross-site harmonization. We hope as researchers use this framework to collect demographic data, this will provide opportunities to establish best practices around data harmonization across diverse settings.

Conclusions

The field of child development currently lacks standards for sociodemographic data. At a time when developmental psychologists are becoming more intensively engaged in sampling across cultural settings, such standards are a necessity. By developing a framework for sociodemographic reporting, we aim to facilitate increased reporting of this information. Sociodemographic details in published reports are not purely descriptive; they add interpretive value. It is not optimal for such data to merely be provided, but not integrated, into the fabric of a study (Rad et al., 2018). Sociodemographic factors are relevant to each stage of the research process (e.g., hypothesis formation, methodologies, data collection, interpretation of findings). For example, developing hypotheses that reflect the local landscape requires cultural knowledge (Nampijja et al., 2010; Super & Harkness, 1997). Successfully designing or adapting methodologies across different cultural settings requires similar insight (Alcock et al., 2008; Fernald et al., 2017). Likewise, the interpretation of data and the lens through which we seek and identify patterns in our data is socioculturally constrained, a fact which often goes unacknowledged (Medin & Bang, 2014). Advancing toward an "individual-in-context" approach requires that demographic data are not only reported, but that the impact of demographic variation on each stage of the research process is examined. This article aims to scaffold the collection of sociodemographic data in the service of greater and more precise definitions of research samples. We hope that by providing a series of standards and open materials, we can encourage community collaboration in the collection and sharing of best practices.

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