

Variation in caregivers' references to their toddlers: Child-directed speech in Vanuatu and Canada

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Abstract

The authors examined similarities and differences in Canadian and ni-Vanuatu caregivers' child-directed speech to their toddlers ($N = 35$, M_{age} : 21 months, 20 girls). Speech samples were collected (2013–2016) during free play and analyzed with a focus on describing parents' references to their toddlers. Canadian caregivers referred significantly more to toddlers' tangible characteristics (relative risk, $RR = 2.12$) and internal states ($RR = 2.31$), whereas ni-Vanuatu caregivers referred more to actions ($RR = 2.04$). When referring to internal states, Canadian mothers referred significantly more to mind-minded states, whereas ni-Vanuatu caregivers referred more to body-minded states ($RR = 7.98$). These findings are interpreted as capturing meaningful differences in toddlers' opportunities to attend to themselves. Implications for self-concept development are discussed.

INTRODUCTION

One of the most commonly studied contexts of language socialization is parent–child reminiscing. During reminiscing, parents highlight the kinds of experiences that are significant to the self, and they do so based on their cultural ideologies. Parents from Western, urban, middle-class backgrounds have been observed to prefer a child-centered, elaborative, and mind-minded approach to reminiscing (Fivush et al., 2011). This approach involves scaffolding children's production of more detailed personal narratives by asking questions about the experience to draw out new details; directing the conversational focus on children's internal states such as emotions, thoughts, and preferences; elaborating on the causes and consequences of children's internal states; and evaluating the psychological value of these experiences for the child (Leichtman et al., 2003; Nelson & Fivush, 2004; Wang, 2001, 2006; Wang & Fivush, 2005). The consensus in the literature is that these strategies

help parents provide their children with opportunities to construct a sense of self where the individual's own perspective is central to the interpretation of the world—an independent model of self (Kağıtçıbaşı, 1996; Markus & Kitayama, 1991). This approach to reminiscing can be contrasted with a more interdependence-oriented approach, which is when parents' focus is on extracting information, pointing to behavioral expectations, and emphasizing interpersonal relations (Hayne & MacDonald, 2003; Leichtman et al., 2003; Şahin-Acar & Leichtman, 2015; Wang et al., 2010; Wang & Fivush, 2005).

Cultural differences in the socialization of cultural selves through narratives begins as soon as children can participate verbally in conversations about themselves. In an early study, Miller et al. (1996) studied two-and-a-half-year-olds from China and United States during home observations and observed that, even at this early age, scaffolded personal storytelling was routinely available in both samples. However, the narratives

Abbreviations: c-unit, communication unit; ICC, intraclass correlation; MSR, mirror self-recognition; SWT, South-West Tanna.

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constructed for Chinese children were more overtly critical compared to American children's which were more overtly self-affirming. Schröder et al. (2013) studied reminiscing samples of 3-year-olds and their mothers from seven different cultural contexts. They observed patterns that were similar to findings examining older children. Specifically, mothers from the two middle-class Western urban contexts (Berlin and Athens) were distinguished from the rest of the sample populations (San José, Delhi, urban Nso, rural Nso, rural Gujarat) with a greater focus on children's personal judgments and preferences and higher use of elaborative-evaluative reminiscing style. In addition, 3-year-olds from Berlin and Athens made more memory contributions during the conversation. Finally, Wang et al. (2010) collected reminiscing samples from mothers and their 3-year-olds from European American and Chinese American families. European American mothers made more references to internal states and gave more explanations regarding the causes and consequences of children's emotional states. In turn, European American children were more likely to provide self-descriptions and evaluations, and reminiscing style mediated the effects of culture on children's self-representations.

So far, we described the literature on verbal children. However, an important question to ask is; how early does the socialization of a cultural self through language begin? One may argue that it begins as soon as birth through the communicative patterns that the infant is embedded in. In their influential work, Ochs and Schieffelin (1984) demonstrated how Anglo-American mothers' discursive practices (patterns of non-verbal communication) differed from those of Kaluli and Samoan mothers. Anglo-American middle-class mothers adopted a dyadic turn-taking model by engaging in face-to-face exchanges, treating their infants as conversational partners, adapting their language to infants' level, and richly interpreting their reactions. In turn, Kaluli and Samoan mothers did not treat their infants as conversational partners. Rather, the authors observed little dyadic verbal exchange between Kaluli mothers and their infants over the first 18 months. Language interactions were constructed in a triadic fashion where mothers faced their infants outwards and spoke for them when others interacted with the infants. More recently, Demuth et al. (2011) examined German and Cameroonian mothers' interactions with their 3-month-old infants. They observed that mothers from both samples engaged in dyadic communicative interactions with their infants by showing high levels of focused attention, establishing rhythm, and being responsive to infants' cues. However, discourse strategies varied markedly. German mothers treated their infants' bodily and vocal reactions as expressions of individual preferences, verbalized those preferences and negotiated solutions. In contrast, Cameroonian mothers took the lead in the interaction and treated their infants as psychologically

symbiotic beings. To our knowledge, there is no research looking at early discursive practices of ni-Vanuatu caregivers. However, our observations in the field suggest that infants are taken as communicative partners and that there are high levels of dyadic exchanges in the first year of life. Overall, this body of literature argues that differences in early communicative interactions lead infants into culturally normative patterns of defining the relationship between the self and the other at a foundational emotional level.

As we reviewed above, studies have described how discursive practices are employed in early dyadic interactions and how older children—who are verbal thinkers, are scaffolded into narrating the self in a culturally meaningful way. Yet, we know little about the transition phase, specifically, the phase which follows infants' participation in the joint attention triangle and precedes their competent use of linguistic reference to represent the self. It is important to study this transition phase because it provides us with an opportunity to understand precisely how language interactions are involved in the construction of a self-concept in the child.

Children begin to engage as interactive partners by around 9 months of age by following their partners' attention toward external objects, and over the second year they get increasingly better at coordinating their perspective with that of their partners (Trevvarthen, 1980; Zahavi & Rochat, 2015). This joint attention context is regarded as the cradle of language development emphasizing early vocabulary acquisition (Tamis-LeMonda et al., 2014; Tomasello, 1988). This is the case because a linguistic reference is not a simple symbol-referent pair. Rather, it is a communicative exchange where one partner directs the other's attention toward a particular object in the world (Bruner, 1974; Tomasello, 1999). Based on this understanding of linguistic reference, it is possible to suggest that the references caregivers make during child-directed speech represent a window into the object of the dyad's joint attention, or at least into where parents are intending to direct their children's attention. Moreover, the extent to which the child appears as the object of attention can be measured by conducting a semantic analysis of caregivers' child-directed speech and identifying caregivers' references to the child.

We recognize that, for this particular age group, language interactions are situated at the intersection of language development, conceptual development, and self-development. This work complements previous literature on self-development by bridging the gap between early developmental stages dominated by non-verbal communication and later stages where children have transitioned to be verbal thinkers. Finally, it offers a fertile framework to explore the relation between linguistic input and cognitive development in general. Operationalizing the referential content of child-directed speech as a proxy for objects of shared attention is well-suited for studying socialization processes

as it unifies caregivers' practice and children's developmental context. For this study, we collected child-directed speech samples during a short free-play session between caregivers and their pre-conversational toddlers ($M_{\text{age}} = 21$ months) from two societies: Vancouver, Canada and Tanna, Vanuatu. These two populations vary in terms of parents' socialization goals as well as children's early self-developmental trajectories (Cebioglu & Broesch, 2021). As such, they provide us with an opportunity to observe how distinct socialization priorities are reflected in child-directed speech. Detailed information on these cultures follows.

Study populations

Vancouver is a cosmopolitan city with a competitive knowledge-based economy. Its population is highly educated, affluent, and culturally diverse. 92% of its population has at least high school level education (Statistics Canada, 2016), the yearly median income is as high as 70,000 Canadian Dollar and 47% of its residents' native language is not one of Canada's official languages (Statistics Canada, 2016). The family structure is nuclear with an average of 2.5 persons per household (Statistics Canada, 2016). On the other hand, Tanna Island is a small-scale island society with a population 29,000 (Vanuatu National Statistics Office, 2009). The Tannese live in small villages where neighbors consist of extended family members and practice small-scale horticulture. Birth rates are high, and children participate in the work force by helping their parents with child rearing and other subsistence activities. At the time of data collection (2014/2015), there was very little integration with a market economy, little media access (no electricity in the villages), and as a result, little influence from Western cultures.

The rural sedentary life and the extended family structure we outlined for Tanna are typically associated with hierarchical agrarian societies and an authoritarian parenting style (for a review, see Kağıtçıbaşı, 1996). But Tanna shows a distinct pattern with a strong egalitarian ethos and as an extension of this cultural more, a unique way of empowering children's autonomy. In order to understand this pattern, we move beyond the individualism–collectivism dichotomy. Kağıtçıbaşı argues that cultural variation on self-other relations is best understood when evaluated on a two-dimensional continuum: the agency dimension (i.e., autonomy—heteronomy) and the interpersonal distance dimension (separateness—relatedness). In this framework, the child-rearing practices of a prototypical Western urban affluent society such as Vancouver is expected to support autonomy and separateness. Our ethnographic observations on Tanna between 2012 and 2019 suggest that socialization in the Tannese villages combines high levels of autonomy and relatedness goals. During our visits, we

observed that parents encouraged their children to develop independent subsistence skills very early on, something that Keller (2012) refers to as action autonomy. For example, as with many rural societies, a Tannese parent would be proud to see their 8-year-old collect food, chop it with a machete, build a fire from scratch, and cook for herself or himself. Children's passive non-compliance and simple refusal of adult requests is common and go unpunished. Finally, there is little structuring of children's daily activities which allows them the agency to organize their own activities. Together with these practices that promote autonomy, interpersonal relatedness is supported through warm and indulgent parenting, co-sleeping (Smit et al., 2019), symbolic adoption of each other's children, and a strong encouragement of children's participation in practices that induce positive social emotions, such as rituals of singing, dancing, and sharing.

Distinct socialization pressures are expected to manifest in children's developmental trajectories; a hypothesis known as the precocity assumption (LeVine, 1997). Consequently, we should expect differences in Tannese and Vancouverite children's self-developmental trajectories such as the onset of mirror self-recognition (MSR), a non-verbal measure of objective self-awareness. The MSR test has high ecological validity outside the Western urban settings including those societies where children have little exposure to mirrors (Kärtner et al., 2012, Priel & de Schonen, 1986; see Cebioglu & Broesch, 2021 for a more detailed discussion) and assesses the child's ability to identify herself as a separate entity (Moore et al., 2007). Consistent with our predictions (Cebioglu & Broesch, 2021), only two of 29 Tannese toddlers (7%) passed the MSR test compared to 15 of 22 Vancouverite toddlers (68%), which implies that separateness and relatedness goals are strong enough to impact children's self-developmental trajectories.

These descriptions suggest that Tanna and Vancouver are at the opposite ends of the spectrum for cultural emphasis on interpersonal distance (Tanna promoting relatedness, Vancouver promoting separateness) while valuing children's agency in culturally unique ways. Traditionally, in both societies, mothers are primary caregivers during the first 2 years of life. Although other children may be more present in infants' and toddlers' lives in Tanna, in Broesch et al. (2021), we showed that between 2 and 25 months ($M_{\text{age}} = 13$ months), a female adult was with the infant the majority of the time. Thus, interactions with the mother represent toddler's typical experience in both field sites. As a result, these two sample populations offer us an excellent comparison group beyond the standard individualist/urban versus collectivist/rural dichotomy and allow us to observe how primary caregivers who have different separateness-relatedness orientations structure their language interactions with toddlers.



Overview of the study and hypotheses

The main goal of this study is to describe the similarities and differences in the referential content of caregivers' child-directed speech to their pre-conversational toddlers in two cultural contexts: Vancouver, Canada, and Tanna Island in Vanuatu. We collected child-directed speech samples during a short free play session. We identified the referential content of each communication unit (c-unit, see [Method](#) section) with a focus on describing mothers' references to their toddlers, as an attempt to illustrate how parents shape children's opportunities to attend to themselves. The first level of coding categorized speech units into general semantic categories: *environment*, *child*, *dyad*, or *other*. We further categorized all references to the child as either: *acts* (e.g., dancing), *tangibles* (e.g., body parts), or *internal states* (e.g., desires). We also provided a break-down of internal states as *mind-minded* (desire, thought/belief, ability/volition, and emotion) or *body-minded* (perception and physiological) to capture different aspects of subjectivity in these two cultural contexts. Finally, we also examined the prevalence of caregivers' references to past events which may allow the toddler to develop a sense of self that is integrated across time and context as it is argued in the reminiscing literature (Fivush & Nelson, 2004).

Given the novelty of our method and the limited cross-cultural evidence on the subject, our analyses were rather exploratory in nature. However, we did set directional hypotheses to the extent that the framework we reviewed above allowed us. Based on the cultural characteristics of these sample populations (i.e., high endorsement of separateness goals among Vancouverite parents versus the high endorsement of relatedness goals among Tannese caregivers and the precocity of MSR among Vancouverite toddlers), we expected that Vancouverite caregivers would be providing their toddlers with more opportunities to attend to themselves. Our main strategy was to describe similarities and differences at the corpus level. In terms of the general referential content of the corpora, we predicted that the Vancouver corpus would contain a higher proportion of references to the child. While we did not have strong expectations for the Tannese sample, we tested the possibility that the Tanna corpus could contain a higher proportion of references to the dyad and to external environment including other people, animals, and objects to promote relatedness or to simply divert the focus of the interaction away from the child. This would be consistent with the patterns of language socialization (e.g., facing the infant outwards to promote triadic social interactions) observed in some other small-scale Pacific societies with infants (e.g., Ochs & Schieffelin, 1984).

In terms of child references, we predicted that the Vancouver subcorpus would contain a higher proportion

of references to internal states based on the reminiscing literature reviewed above. While having less strong expectations due to lack of empirical evidence, we also expected a higher proportion of references to tangibles within the Vancouver subcorpus, because naming games (e.g., where is your nose?) have previously been discussed in relation to self-development (Mitchell, 1993; Tomasello, 1999). Without setting strict hypotheses, we explored the possibility that Tannese caregivers may be more likely to refer to actions, consistent with the socialization practices that promote action autonomy as we described earlier. Finally, turning attention to the internal state references, we predicted a higher proportion of mind-minded internal state references in the Vancouver subcorpus, based on the reminiscing literature reviewed above.

METHOD

Participants

Thirty-five toddlers ($n = 16$ for Vancouver, $n = 19$ for Tanna) and their primary caregivers participated in this study. There were 20 girls ($n = 7$ for Vancouver, $n = 13$ for Tanna), and 15 boys ($n = 9$ for Vancouver, $n = 6$ for Tanna). Gender distribution was comparable between groups, $\chi^2(1, 35) = 2.16, p = .142$. The average age of toddlers was 21.31 months (range = 18.23–28.43, $SD = 2.53$). Vancouverite toddlers were significantly younger, $t(1, 33) = 2.81, p = .008$, with an average age of 20.12 months (range = 18.23–22.97, $SD = 1.39$) in Vancouver and 22.31 months (range = 19.10–28.43, $SD = 1.18$) in Tanna. All Vancouverite caregivers were mothers and primary caregivers. Mothers' average age was 34.75 years ($SD = 5.15$) and they had, on average, 19.06 years ($SD = 3.51$) of education. Tannese caregivers consisted of 17 mothers, one father, and one adolescent older sibling. Caregivers' average age was 28.78 years ($SD = 7.30$) based on approximated self-report. Only 26% of the caregivers ($n = 5$) attended school, and for 5 years on average. In Canada, all participants came from English-speaking monolingual families ($n = 12$) or bilingual families ($n = 4$) and interacted in English during free play. Among those who were bilingual, three mothers reported their native language as Cantonese, one mother as Punjabi. All Tannese participants came from multilingual families who were native speakers of Lenakel and South-West Tanna (SWT). During the free play, caregivers interacted with their children in their native language. In Tanna, three dyads were excluded due to toddlers' fussiness and one dyad was excluded because the primary caregiver was a preadolescent child. In Vancouver, two dyads were excluded due to fussiness, and three dyads were excluded because a significant portion of the interactions was in mothers' native language (Japanese, German, and French).

Procedure

We video recorded caregivers and their toddlers during a 10-min free play session after they participated in another study. The free play session consisted of 5 min of free play without toys where the mother and the toddler were instructed to play (*avikil* in Lenakel) in any manner they wished and 5 min of free play where they were instructed to play with toys. In this study, we only examined the free play session without toys because it was a more suitable context to elicit interactions that focused on the child and allowed caregivers the freedom to choose the interactive medium and/or conversation topic. This gave more opportunities to observe individual and cross-cultural variation in the content of child-directed speech. For example, some caregivers chose to sing and dance with their toddler, whereas others chose to talk about their experiences on their visit to the laboratory. In both societies, we obtained caregivers' consent verbally.

The data were collected by the first author in Vancouver between 2013 and 2016 and in Tanna between 2014 and 2015 over two separate field trips. Canadian caregivers were recruited from the greater Vancouver region of British Columbia, Canada. Participants were tested either in the laboratory ($n = 5$), in participants' homes ($n = 7$) or in a day care ($n = 4$). To recruit in Tanna, we obtained research permits from the Vanuatu Cultural Centre (Vanuatu Kaljoral Senta; VKS) and permission from the local chiefs. The first author trained a local research assistant who was fluent in English to run the procedure in participants' native language and closely supervised the data collection in an unobtrusive manner. Participants were tested in participants' homes ($n = 3$), a public kitchen ($n = 3$), or in a quiet open area ($n = 13$).

Background on Tanna languages

Vanuatu is the densest linguistic landscape in the world with 106 languages (Lynch, 2001) spoken in its 80 inhabited islands. Consistent with its linguistic diversity, multilingualism is widespread in Vanuatu (Walworth et al., 2021). Lynch (2001) lists five languages (i.e., dialect chains) for Tanna Island. These languages are closely related and form together a subgroup of their own that is classified under the Austronesian language family (Lynch, 2001). Our participants came from neighboring communities in Central Western Tanna who were native speakers of either Lenakel language ($n = 9$) or SWT language ($n = 10$). Adults from this part of the island are typically fluent in both languages.

Both languages have the basic SV(O) order and share a complex verbal morphosyntax where the verb consists of a root and several affixes marking person, number of subjects, tense, transitivity, directionality, etc., and have almost identical sound systems (Lynch, 1978, 1982).

Nehbass (2012) estimates 59% lexical similarity between Lenakel and SWT. Both languages maintain strong oral traditions. The only printed materials in Tanna languages are missionary publications which have been using substandard orthographies until recently (Lynch & Crowley, 2001). However, most of our participants came from villages that do not endorse Christianity and did not have a motivation to engage with printed material. In our experience, at the time of data collection (2014–2015), there was no tradition of writing the local language in the villages where we recruited. Among those individuals who had formal schooling experience, those who had maintained functional literacy skills wrote in Bislama, a creole with English vocabulary that brings a markedly different phonology. As a result, a local research assistant who could transcribe and code the interactions in the local language was not accessible. Therefore, we analyzed the Tanna data through English translations. The next section explains the translation process in more detail.

Translation and transcription of the free play interactions

In Vancouver, we edited the free play videos prior to transcription to obtain uninterrupted interactions. A trained research assistant synchronized the two video angles and excluded the following parts (a) the toddler is out of view, (b) the toddler is crying, or (c) another external intrusion is preventing the interaction. In Tanna, we did not have the opportunity to edit videos. Instead, the first author made exclusion decisions based on the identical rules listed above and kept track of the lost duration. The mean duration of transcribed interactions was 4.6 min, and was comparable between sites, $t(1, 33) = 0.70, p = .946$.

In Vancouver, a research assistant who is native in English watched the edited videos and transcribed caregivers' speech verbatim. Toddlers' speech content was also transcribed. A second researcher independently watched the videos, reviewed the transcript and recorded all disagreements. The disagreements were resolved through discussion between the research assistants and the first author. In Tanna, the interactions were translated from the local language (either Lenakel or SWT) into English orally and transcribed in English. During this process, the first author worked closely with a local interpreter who is fluent in both local languages and English. The first author paused the video after each utterance and re-played it as many times as necessary to achieve accurate comprehension and translation by the interpreter. The interpreter listened to the played utterance and orally translated it to English. The English translation was handwritten by the first author. Again, toddlers' speech content was also transcribed. After returning from the field,



a research assistant typed the handwritten transcriptions. These transcriptions were compared to the original notes by the first author to ensure accuracy.

All the interactions were translated by the same interpreter to have consistency in potential translation biases (see Twinn, 1997 for discussion). As a mother from the same community, our interpreter was knowledgeable in the local norms of communication and was blind to the hypotheses of the study. In addition, a subsample of the data was translated by a second interpreter (again, a mother from the local community) as a reliability check. The second interpreter translated five randomly selected interactions (26% of the Tanna sample) with the same process described above. The transcriptions were parsed, coded, and compared to the five cases from the original dataset. We examined the consistency of the codes with a series of two-way mixed, absolute, single measures intraclass correlations (ICCs). The ICCs calculated for the general referential content varied between .90 and .98, indicating high consistency (Cicchetti, 1994). The ICCs calculated for the referential content focused on the child ranged between .84 and .97. We were not able to calculate an ICC statistic for the referential content focused on internal states because the scores were identical. Finally, we also were not able to calculate ICC scores for past talk as it appeared only once. Overall, our analysis of the two sets of translations suggested that the content of the interactions could be reliably translated.

Preparing the dataset

To prepare the transcribed texts for coding, we removed toddlers' speech content as well as the nursery rhymes and song lyrics produced by the mother, leaving only spontaneous child-directed speech as data. In Tanna, the excluded child speech content (28 c-units) constituted 3.05% of all c-units. The majority of these ($n = 21$, 75%) were one-word utterances, the most popular being a variation of the word mother (e.g., mama). In Vancouver, there was more toddler speech. We excluded 273 c-units which constituted 20.04% of all c-units. The majority of these ($n = 229$, 83.88%) were also one-word utterances, the most popular being a variation of the word yes (e.g., yeah).

It was not possible to reliably translate song lyrics and nursery rhymes in Tanna (see details below). To reach consistency, we excluded songs and games with nursery rhymes from both corpora. In Tanna, caregivers spent an average of 88.42 s ($SD = 58.80$) of the free-play session either singing or playing games with nursery rhymes. These non-transcribed interactions lasted a total of 28 min (32.15% of the available footage). In Vancouver, mothers spent an average of 44.56 s ($SD = 46.68$) singing children's songs or playing games with nursery rhymes. The total duration of this content was 12 min (16.12%

of the available footage). A t test suggested that the excluded interactions were longer in Tanna, $t(1, 33) = 2.78$, $p = .009$. The content of the excluded sections are described below.

In Tanna, caregivers sang their toddlers *kastom songs*. These are traditional songs that are often sang and danced to during ceremonies. Children are embedded in these rituals early in life. This was evident by the fact that some toddlers eagerly started to dance when prompted. Our interpreter identified themes for these songs (e.g., the most popular song *Meto Meto* tells the story of a king), but she was not able to provide complete translations due to the prevalence of archaic words. We also identified the themes of the children's games and discussed whether the nursery rhymes made reference to children whenever our interpreter was able to provide a translation. The two most played games were *ninginingitonga* and *tabetabeyaylo*. In *tabetabeyaylo*, partners open their hands, place them on top of each other's alternately, move them up and down in a coordinated fashion, and tickle each other by the end of the rhyme. Our interpreter explained that the lyrics were about cooking *laplap* (a traditional dish) but was not able to provide a complete translation. In its more complex versions, the game is altered to include higher level body coordination and language use. The mother asks the child "For who?" and the child answers with names which seems to provide the children with an opportunity to practice sharing and learning kinship vocabulary. This version was observed briefly in one dyad. The mother asked the question and answered for the child (i.e., "For daddy."). This phrase was not transcribed as it was considered part of the nursery rhyme. Had it been coded; it would have been categorized under the *environment* category in the second level of coding (see below). In *ninginingitonga*, one of the players makes a fist and extends their index finger. The other player wraps their palm around the extended finger and extends their index finger, and so on. The players end up building a hand tower which points to each player one by one. According to our interpreter, the lyrics were made to rhyme and were not meaningful. During these games, caregivers often paused the game and gave directions that made reference to body parts (e.g., "Lift your hands up."). All these utterances were transcribed and coded. In Vancouver, the two most popular games were *wheels on the bus* and *round around the garden*. Similar to those in Tanna, these games also involved attention to body parts, imitation, coordination, and induced positive emotions. Again, whenever a comment occurred in between the lyrics (e.g., "Give me your hands."), the comment was transcribed and coded. Overall, the interactive experiences that took place during songs and games with nursery rhymes seemed comparable between the sites -albeit non-verbal interactions were outside of the scope of this paper. Regarding speech content, to the best of our ability, we confirmed that the lyrics and nursery rhymes in Tanna did not make

reference to children. Therefore, we concluded that the exclusion of these sections does not introduce a systematic bias into the dataset.

Finally, the remaining corpora was dissected into the chosen unit of analysis: a c-unit (Loban, 1976). Semantically, a c-unit is defined as a group of words which cannot further be divided without the loss of their essential meaning (Loban, 1976). Structurally, it is defined as an independent clause and its modifiers (Loban, 1976). Whenever an utterance qualified for a clause, it was segmented based on structural definition (e.g., “Sit down.”, “If you cry, I will leave you.”). Whenever an utterance did not qualify for a clause, the segmentation was made based on the semantic definition (“What?”, “The other game.”). In order to establish reliability, the first author trained a research assistant who independently parsed nine randomly selected transcriptions (26% of the sample). The percent agreement was 98%.

Coding

The dataset was coded for general referential content, referential content focused on the child, referential content focused on the child's internal states, and for past talk. For general referential content and past talk, we coded all c-units. The general referential content coding categorized each c-unit under four mutually exclusive categories: child, dyad, environment, and other. C-units that were categorized under the child category were then coded under three mutually exclusive categories: internal states, tangibles, and acts. Finally, those c-units that were coded as internal states were further categorized into six mutually exclusive categories: four mind-minded (desire, thought/belief, ability/volition, and emotion) and two body-minded (perception and physiological). For all variables coded, final scores reflected the frequency of c-units coded in a certain category. To establish reliability, a research assistant independently coded eight randomly selected dyads (23% of the sample). The kappa score was .95 for the general referential content, .92 for the referential content focused on the child, .97 for the referential content focused on the child's internal states, and 1.00 for past talk.

General referential content

Recall that we categorized each c-unit into one of the four mutually exclusive referent categories: (1) child, (2) dyad, (3) environment, (4) other. The referent categories were inspired by Morikawa et al. (1988). A *child* code was assigned whenever the c-unit referred to the toddler (e.g., “Are you hungry?”, “Come back here.”). A *dyad* code was assigned whenever the c-unit referred to the dyad as a unit (e.g., “Let's sing a song.”, “We will play naronaro.”). An *environment* code was assigned whenever the

c-unit was about an object, an animal, or a third person (e.g., “Daddy is home.”, “The caterpillar is over there.”). Caregivers' references to themselves were also coded in this category (e.g., “I don't see it.”). The *other* code was assigned whenever the c-unit could not be categorized under the three other categories confidently or whenever it did not have a clear referent (e.g., “Okay.”).

Referential content focused on the child

This coding system targeted those c-units which were coded as *child* in the previous level of coding. To identify the attributes that caregivers referred to in their toddlers, each targeted c-unit was assigned into one of three mutually exclusive categories: (1) internal states, (2) tangibles, and (3) acts. We assigned the code *internal states* whenever the caregiver referred to her toddler's internal states (e.g., “Are you dizzy?”, “What do you want?”). We assigned the code *tangibles* whenever the caregiver referred to a body part or a possession of the toddler as well as the toddler more generally (e.g., “Is that your tummy?”, “Where is Joshua?”). One-word c-units consisting of the child's name or the pronoun *you* were also classified under this category. We assigned the code *acts* whenever the caregiver singly referred to the child's behavior or performance (e.g., “Dance!”, “Sing a song to the baby.”). Whenever a c-unit qualified for more than one code, we prioritized the *tangible* code over the *act* code and the *internal state* code over the *tangible* code. For example, “Show me your teeth.” was coded as *tangible* and “Wanna dance?” was coded as *internal state*.

Referential content focused on the child's internal states

The coding system was based on Bretherton and Beeghly (1982) and targeted those c-units that were coded as *internal state* in the previous level of coding, which were then placed into one of the mutually exclusive internal state categories. To start, there were two broad categories: (1) mind-minded internal states and (2) body-minded internal states. The term mind-minded internal state was inspired by Meins's (1997) concept of mind-mindedness and constituted of c-units where caregivers referred to their toddler's mental or psychological processes. The subcategories were (a) desire, (b) thought, (c) ability/volition, and (d) emotion. Body-minded internal states involved those c-units where caregivers referred to their toddler's bodily sensations: (a) perception and (b) physiological. We assigned a *desire* code for c-units that referred to the toddler's wants and wishes; a *thought/belief* code for those that referred to the toddler's mental activities; an *ability/volition* code for those that referred to the toddler's capacity to perform a certain action; an



emotion code when the toddler's internal state was an emotion, a feeling, or a mood; a *perceptual* code when a perception such as seeing or hearing was referred to; and finally, a *physiological* code whenever the toddler's physiological state such as hunger or sleepiness was referred to. We coded crying under the physiological category as it made reference to an observable bodily response rather than more abstract feeling of sadness. Examples are presented in Table 1. When categorizing a c-unit that referred to two internal states at once, we again used a prioritizing strategy. A mind-minded internal state always overruled a body-minded internal state. For example, the c-unit "Wanna [desire] see [perception] mama?" was coded under the *mind-minded* category, and *desire* subcategory.

All coded categories could be expressed in Tanna languages and could be suitably categorized through English translations. Examples of Lenakel words associated with these categories and cross-linguistic considerations that informed our coding conventions are presented below. Tanna languages have both positive and negative verbs expressing desire and knowledge. Commonly used verbs to describe desire are *olkeikei* (to want/like/love/desire), *amwa* (to want/intend) and the negative verb *apwas* (to not want/refuse). In turn, commonly used verbs to indicate knowledge are *hinatin* (to know) and *itiktik* (to not know). Emotions can be expressed through the use of the verb *feeling* (*arou*) combined with an emotional adjective or through psycho-collocations. For example, *nikiik ragien* (I am happy) translates as *my heart is happy*. Therefore, we carefully avoided mistakenly categorizing psycho-allocations as references to body parts. Tanna languages and the English language construct ability/volition in similar ways. In the verbal morphology of Tanna languages, tense and aspect are marked but not modality (with the exception of interrogative), therefore ability and volition are indicated with auxiliary verbs. Obligation is expressed with the verb *akaikei* (must/have to). Ability is expressed with the verb *ru* (try to/attempt). In English, the verb *can* is often used to mark polite requests, in addition to ability/volition. The verb *ru* has

the same function. In Lenakel, we observed an increased emphasis of obligation in the following form. In Tanna languages, when forming imperatives, the person suffix is optional and typically omitted. When caregivers dropped the second person suffix (*n-*), our interpreter translated the phrases to English using the conventional imperative form (e.g., "Come!"). When they added the suffix, she translated them by adding the English subject pronoun (e.g., "You come!"). We discussed the meaning of these two usages with our interpreter and we made a note indicating the presence or absence of the person suffix in our translations. All the while, both constructions were coded under the *action* category in the second level of coding and were not considered a reference to internal state. We considered the possibility of coding the verb looking under action. In Lenakel, the verbs looking (*uag*) and seeing (*aamlh*) are carefully discriminated and, unlike in English, both verbs can be used in imperative mood (e.g., "Look over here and see something."). Because Vancouverite caregivers always used the verb looking to request visual attention (e.g., "Come over here and look."), we coded both verbs under perception similar to Bretherton and Beeghy (1982).

Past talk

We coded all c-units exhaustively into two mutually exclusive categories: (1) past talk, (2) other. We assigned a *past talk* code when the caregiver used past tense in the c-unit regardless of whether the c-unit referred to the child (e.g., "Were you gentle with the baby?") or not ("She asked us to play in here until she comes back."). All other c-units were coded as *other*. Tanna languages indicate past tense with the prefix *-im*.

RESULTS

In total, there were 1978 c-units ($M = 56.51$, $SD = 30.38$). Vancouverite caregivers were more verbose ($t(28.48)$,

TABLE 1 Coding of the referential content focused on the child's internal states

Referent category	Referent sub-category	Examples
Mind-minded internal states	Desire	Wanna sing a song? Where do you wanna go?
	Thought/belief	Do you know the next verse? Remember that song?
	Ability/volition	Can you find me the blue card? You gotta sit down please.
	Emotion	Do you like blue? Don't worry about it.
Body-minded internal states	Perceptual	Do you see the dog coming? Do you hear the airplanes?
	Physiological	Are you thirsty? You are getting sleepy.

$p = .013$). On average, they produced 14.96 c-units per min ($SD = 3.55$), whereas Tannese caregivers produced 10.29 c-units ($SD = 6.60$). Table 2 shows frequencies and proportions for all categories separately for Tanna and Vancouver samples and refers to increasingly more fine-grained coding categories as levels 1, 2, 3, and 4. We analyzed the data by comparing the distribution of c-units into (increasingly more fine-grained) referent categories within Tanna and Vancouver corpora using chi-square tests for homogeneity. Post-hoc power analyses suggested that the chi-square tests could detect a small effect at $p = .05$ on the second level of coding, a medium effect at $p = .01$ on the third level of coding (Cohen, 1992).

The corpus level-analysis allowed us to examine whether our Vancouverite or Tannese caregivers, as a group, produced more references under a referent category of interest relative to other categories of the same level of analysis while accounting for individual variation in the duration of sampled interactions and in verbosity. In addition, we were able to avoid the challenges that an individual-level analysis would have brought, had we calculated individual scores representing the rate of a subcategory within the higher subcategory (i.e., unequal variances between groups, concerns regarding the meaning of rate scores across rare and common codes, and zeros which were apparent within the Tanna sample). However, because the data points (i.e., c-units compiled in the corpora) were not randomly sampled from the populations, our capacity to make sample to population inferences was compromised. In addition, any insights regarding within-culture variation were lost. To provide a more complete picture, we plotted participants' individual scores for every referent category as a percentage of their total c-units and marked sample means and CIs (see Figure 1). This figure offers information regarding the distribution of individual scores and whether the differences between samples are likely to be statistically significant given that a 50% overlap in CIs suggest a statistically significant difference (at $p = .05$) between sample means (Cumming & Finch, 2005).

General referential content

The first round of analyses evaluated whether Tanna and Vancouver corpora contained references to (a) the child, (b) the dyad, (c) the environment, or (d) other events in similar proportions (level 1 on Table 2). The chi-square test was significant ($\chi^2(3, 1978) = 44.50, p < .001$), but the effect size was small (Cohen's $w = .15$). In order to understand which cells significantly contributed to this effect, we ran follow-up tests by computing individual cell residuals (Agresti, 2018) using the `chisq.posthoc.test` package (v. 0.1.2; Ebbert, 2019) in R 4.1.1 (R Core Team, 2021). Results showed that only two cells had made significant contributions (in order of contribution): (1) *other* references ($R = 6.30, p < .001$) and *child* references ($R = -4.78,$

$p < .001$). These suggest that the Vancouver corpus contained a higher proportion of *other* references compared to the Tanna corpus, whereas the Tanna corpus contained a higher proportion of *child* references compared to the Vancouver corpus. To put it differently, caregivers in our Vancouver sample, as a group, were more likely to refer to *other* events, whereas caregivers in our Tanna sample were more likely to refer to their toddlers. To get a measure of the magnitude of these effects, we calculated relative risk values by creating 2×2 contingency tables where rows represented sample populations and the columns represented the number of observations under the category of interest and the rest. The Vancouver corpus was 2.30 times more likely to contain *other* references and the Tanna corpus was 1.22 times more likely to contain *child* references—which is a small effect. Roughly half of the c-units in both corpora made reference to the child (60.52% in Tanna, 49.77% in Vancouver). This pattern is also visible in Figure 1; on average, caregivers from both samples referred to their toddlers more than half of time and CIs for sample means largely overlapped.

Referential content focused on the child

In the next round, we worked with the subcorpora that only contained references to toddlers and compared the distribution of these c-units into the following categories (a) internal states, (b) tangibles, and (c) acts (level 2, on Table 2) between Tanna and Vancouver. The chi-square test was significant ($\chi^2(2, 1080) = 140.08, p < .001$), and this time with a medium size effect size (Cohen's $w = .36$). An examination of residuals suggested that all cells contributed to the significant effect (in order of contribution): (1) acts ($R = -11.83, p < .001$), (2) internal states ($R = 7.79, p < .001$), (3) tangibles ($R = 6.07, p < .001$). These results suggest that, the Tanna subcorpus contained a higher proportion of references to acts, whereas the Vancouver subcorpus contained a higher proportion of references to internal states and tangible characteristics. Relative risk values were calculated as 2.04 for the effect on acts, 2.31 for the effect on internal states, and 2.12 for the effect on tangibles. Notice that, in Figure 1, the difference in group means is non-significant for the *tangibles* variable, as indicated by overlapping CIs. This is compatible with the results of the chi-square analysis because the likelihood indicted by the chi-square test is relative to participants' references to acts and internal states and does not involve a test of the absolute difference in rates.

Referential content focused on the Child's internal states

Finally, we examined the distribution of internal state references into mind-minded and body-minded internal state categories (level 3 on Table 2). The chi-square

TABLE 2 Frequencies and proportions of referent categories for each level of coding presented separately for Canada and Vanuatu

		Vanuatu							
L1		Child				Dyad	Env	Other	Total
		538 (60.52%)				76 (8.55%)	197 (22.16%)	78 (8.77%)	889 (100%)
L2		Internal states		Tangibles		Actions			
		86 (15.99%)		72 (13.38%)		380 (70.63%)			
L3		Body-minded							
		77 (89.53%)						538 (100%)	
L4		Des	Thin	Ab/Vol	Emo	Perc	Phys		
		4 (4.65%)	1 (1.16%)	4 (4.65%)	0 (0.00%)	71 (82.56%)	6 (6.98%)	86 (100%)	
								86 (100%)	
		Canada							
L1		Child				Dyad	Env	Other	Total
		542 (49.77%)				96 (8.82%)	247 (22.68%)	204 (18.73%)	1089 (100%)
L2		Internal states		Tangibles		Actions			
		200 (36.90%)		154 (28.41%)		188 (36.69%)		542 (100%)	
L3		Body-minded							
		33 (16.50%)						200 (100%)	
L4		Des	Thin	Ab/Vol	Emo	Perc	Phys		
		83 (41.50%)	17 (8.50%)	61 (30.50%)	6 (3.00%)	26 (13.00%)	7 (3.50%)	200 (100%)	

Note: L1 (lightest gray), Level 1; L2, Level 2; L3, Level 3; L4 (darkest gray), Level 4.

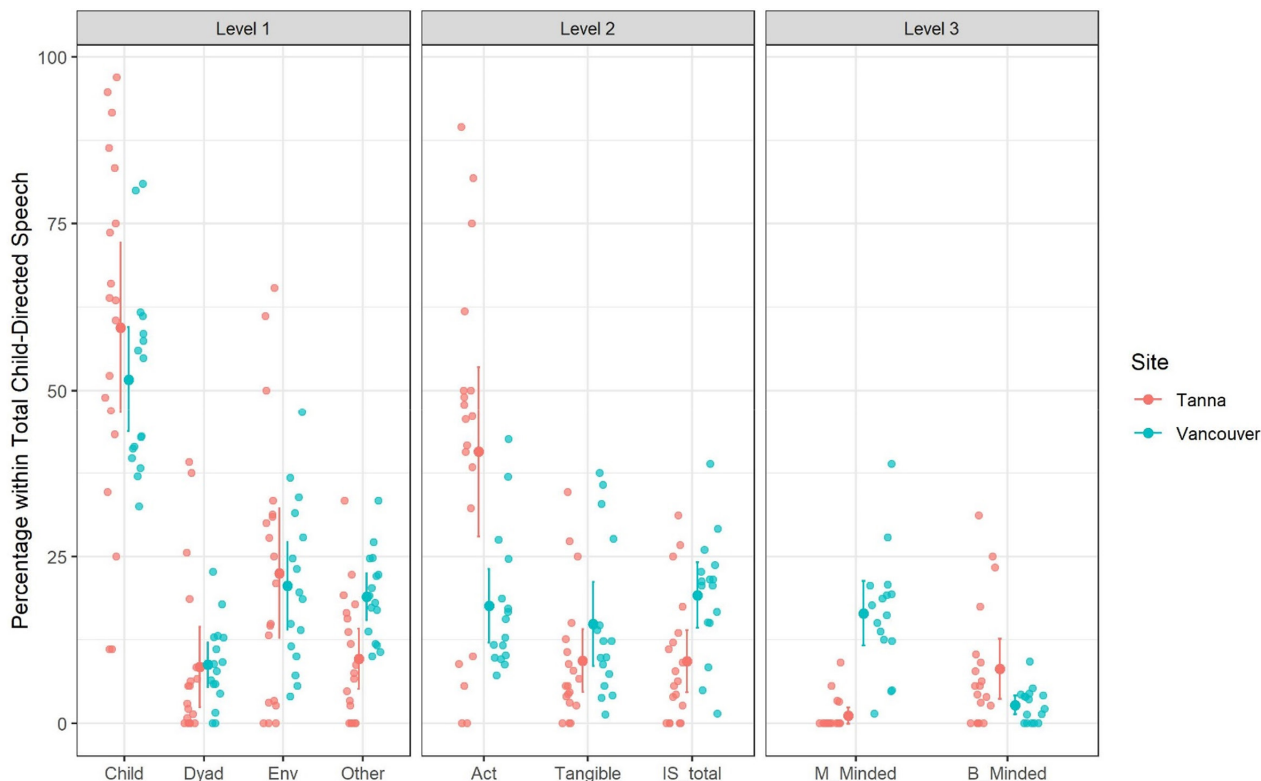


FIGURE 1 Individual variation in child-directed speech by site. The referent categories available for each level of coding are represented in the x-axis (Level 1: Child, Dyad, Environment, and Other; Level 2: Acts, Tangibles, and Internal States; Level 3: Mind-Minded Internal States and Body-Minded Internal States). Each plotted dot corresponds to an individual participant's data point and represents the percentage of total c-units that fall under the relevant category. Sample means and 95% confidence intervals for the means are shown in darker color.

test was significant ($\chi^2(1, 258) = 132.47, p < .001$), and this time with a large effect size (Cohen's $w = .69$). The relative risk values indicated that the Vancouver subcorpus was 7.98 times more likely to include references to children's mind-minded internal states, whereas the opposite pattern was true to Tannese caregivers. Table 1 shows that 90% of all internal state references in the Tanna subcorpus were body-minded internal states, whereas in the Vancouver subcorpus, 84% of all internal state references were mind-minded internal states. Based on the non-overlapping CIs shown in Figure 1, we can add that Vancouverite caregivers referred to their toddlers' mind-related internal states at a higher level. Because at least one cell had zero observations in Tanna, we did not compare the distribution of individual categories. As shown in Table 2, the most common code in the Tanna subcorpus was perception followed by the physiological category. We did not observe any reference to emotions. The most common code in the Vancouver subcorpus was desire followed by the ability/volition.

Past talk

Not all mothers in the sample referred to past events; nine of 16 Vancouverite caregivers (56%) referred to at

least one past event compared to only two of 19 Tannese caregivers (11%), $\chi^2(1, 35) = 8.43, p = .004$. In Vancouver, c-units that referred to a past event constituted 3.31% of all c-units in the corpus, whereas this rate was only .22% among Tannese caregivers and the difference in proportions was significant ($\chi^2(1) = 23.05, p < .001$) but the effect was small (Cohen's $w = .11$).

DISCUSSION

The main goal of this study was to gain insights into how early language interactions shape toddlers' opportunities to attend to themselves in cultural groups with distinct socialization priorities. We used an innovative yet simple method to approach this question. We conducted a semantic analysis of caregivers' references to their toddlers. We recruited caregivers and toddlers from Vancouver, Canada and Tanna, Vanuatu; two sociocultural contexts where caregivers' emphasis on the socialization of interpersonal relatedness and toddlers' early self-developmental trajectories vary significantly. We present the first examination of the referential content of child-directed speech from a self-developmental perspective, provide insightful descriptions of how child-directed speech to toddlers reflects cultural priorities of

Vancouverite and Tannese caregivers, and discuss potential implications for children's self-concept development.

Our analyses suggested that language interactions revolved around toddlers. Caregivers from both societies referred to their toddlers, roughly half of time during child-directed speech (Figure 1). These results suggest that the critical differences lie not in the extent to which caregivers refer to their toddlers but instead in what they highlight about their toddlers. To our surprise, the proportion of child references was slightly higher in the Tanna corpus although the effect size was small. The child (and particularly, *the acting child*, discussed below) being the focus of the interactions in Tanna may be reflecting the unique Tannese socialization where children are encouraged to be sociable, proactive, and self-sufficient. In addition, developing an understanding of self as separate from others is a universal developmental goal. Directing a child's attention entirely away from the self or speaking to the child as though they are not an agentic being may be counterproductive to that universal goal, especially if the practice is maintained beyond infancy. Tanna and Vancouver corpora were equally likely to contain references to the dyad, and to the environment. We do not think that Tanna caregivers' focus on the child was a product of the semi-structured testing environment. Unlike in Vancouver, most of the testing in Tanna took place in a calm public outside location. If they wished, caregivers could have directed their child's attention to the external environment, and they did so to some extent. We observed caregivers pointing to other people or call the dogs and the chickens to distract a toddler who is getting fussy. They simply did so to the same extent that Vancouverite caregivers pointed to the experimental props or talked about the experimenter who will soon come back and bring more toys. Finally, our analyses showed that the proportion of c-units which we coded under the *other* category was higher in Vancouver corpus. We think that this finding has little implications, and that it may be reflecting Vancouverite caregivers' verbosity and frequent use of fillers—short utterances that do not have a clear referent (e.g., “Okay,” “All done!”).

We found remarkable differences when examining child references more closely to understand *the ways* in which toddlers were referenced. Consistent with our hypotheses, the proportion of internal state references was higher in the Vancouver subcorpus (note that an alternative coding of internal state references changes these results, see below). In other words, when our Vancouverite caregivers referred to toddlers, they were more likely to refer to their internal states. An examination of individual rate scores (Figure 1) also suggested that, on average, they used higher levels of internal state references. The following excerpt demonstrates the high frequency of internal state references. Child speech content was added for demonstration. Each word that led to an internal state code for the c-unit is bolded:

Mother: What do you **want** to play?

Mother: [Mother sings *here is the beehive*] **Remember** that song?

Child: Yeah.

Mother: Yeah.

Mother: Okay then. One two three four five. Bzzz bzzz bzzz.

Mother: Do you **like** the bee?

References to toddlers within the Vancouver subcorpus were also more likely to denote toddlers' tangible characteristics. Despite this, at the individual level, caregivers' references to tangibles remained similar between the samples (Figure 1). These linguistic forms referred to the toddler as a concrete entity rather than a psychological one. In our Vancouver corpus, most of the references coded under this category involved a showing game where the toddler or toddler's body part appeared as the object of the dyad's joint attention (e.g., “Where is your nose?”). Caregivers in our Tanna sample referred to children's body parts when they gave instructions for games such as *tabetabeyaylo* where partners coordinate their hands or *tugutugu* where players need to tuck their legs when pointed at. Later in the Discussion section, we explain how such joint attention episodes may support self-development.

Consistent with our hypotheses, we observed a higher proportion of references to toddlers' acts in the Tanna subcorpus. Whenever they referred to their toddlers, our Tannese caregivers were more likely to refer to actions. An examination of individual rate scores (Figure 1) also suggested that, on average, they used more action references. Most of these were used to summon the child and inviting them to perform acts such as singing or dancing. To exemplify, we provide continuous excerpts from two dyads.

Mother: Come close, my girl.

Mother: We will sing a song and you will dance.

Mother: Say it. You will take the doll and dance with it.

Mother: Stand up while mommy is singing.

Mother: Stand up [M is singing]. Stand up [M is singing].

Mother: Dance! Dance!

Differences in caregivers' activity orientation in child-directed speech have been reported in cross-linguistic research. This literature suggests that these differences may be linked to the noun- versus verb-bias phenomenon observed in toddlers' early vocabulary development (e.g., Kim et al., 2000). But its implications have not been examined from a perspective of self-development. We speculate that through common action requests, our Tannese caregivers may have encouraged their toddlers to be active through performance and deterred inhibition. Such

a practice would prepare children to readily participate in cultural routines that promote relatedness through the shared positive affect of singing and dancing. Perceiving the child as the *acting child*, may be the Tannese way of aspiring agency while protecting relatedness.

Even though the Vancouver subcorpus was more likely to include internal state references, internal state references were observed in both groups (see Figure 1). Yet, our Vancouverite caregivers seem to have consistently chosen mind-minded internal states over body-minded internal states and focused particularly on desire and ability/volition (e.g., “What do you want to play?”). The opposite pattern was true for the Tanna subcorpus; with our Tanna caregivers producing predominantly body-minded internal states (e.g., “Do you see the dog coming?”). The implications of a caregiver preference for body-minded internal states are not clear. It is possible that frequent references to body-minded internal states support body-awareness (Moore et al., 2007), or the ability to think about the relation between the self and the environment, speculatively an essential skill in a society where people are dependent on nature for their daily subsistence.

The differences we observed in mind-minded internal state references were remarkable. Within the Tanna subcorpus, only 10.47% of internal state references were mind-minded as opposed to 89.53% in Vancouver. As depicted in Table 2, there was no reference to toddlers' emotions and only one reference to thoughts. Before arguing that this pattern reflects a de-emphasis on the socialization of a separate self for this age group, we would like to consider alternative hypotheses. One could suggest that Tannese caregivers were showing a global cultural avoidance of talking about others' minds, known as the opacity doctrine (Robbins & Rumsey, 2008). To understand whether this pattern was specific to this age group, we ran preliminary analyses on data collected for currently ongoing projects. We observed that with older children, Tanna caregivers' child-directed speech tended to resemble the ones we described for our Vancouverite caregivers. For example, a mother took a 34-month-old child's assent to participate with the following phrases: “Would you like her to give you something? [the dyad will receive a gift for participating]”, “Don't be afraid. Say you would like to.” Other caregivers offered their children opportunities to express their impressions. A mother said to a 28-month-old: “Do you like this house? [this particular child was tested inside a tent]”. Another mother said to her 24-month-old: “Do you like the chair? [we asked children to sit on a folding picnic chair for another task]”. Yet, another mother said to her 31-month-old: “Do you like grandma Misses? [she refers to the first author]”. These examples (all of which would be coded as emotion) are in line with the precocity hypothesis and demonstrate that, with slightly older children, Tanna caregivers may be referring to internal states.

Alternatively, we could argue that these differences reflect politeness norms which shape how one would invite children to act. For our Tannese caregivers, the

dominant pattern for inviting action was to either use the imperative mood (“Dance!”), the future tense (“The baby will dance?”) or to use a 1st person plural (e.g., “We will sing.”). Our Vancouverite caregivers used these constructions too. We saw the imperative mood (e.g., “Stand up!”), the 1st person plural (e.g., “How about we do wheels on the bus?”) and the future tense (e.g., “Will you give mommy a hug?”). However, they most often preferred to combine the action reference with an internal state reference (e.g., “Can you jump like a bunny?”, “Wanna practice your summersault?”). An additional analysis to see the extent of this preference suggested that 59.50% of all internal state references and 71.26% of mind-minded internal state references in our Vancouver corpus was indeed inviting action. Could this common practice have inflated the rate of internal state references? Such constructions are possible in Tanna languages as well, but they appeared only rarely in the Tanna corpus. A re-analysis of the data (originally 2nd level of coding: action, tangibles, internal state) after recoding all *internal state* references which invited action as *action* references changed some of the patterns we reported. The new chi-square test ($\chi^2(2) = 38.32, p < .001$, Cohen's $w = .19$) suggested that the proportion of action references still remained higher in the Tanna subcorpus ($R = -5.04, p < .001$), however, the differences observed in internal state references disappeared ($R = -.14, p = 1.000$). Despite that, a re-analysis of internal state subcategories (originally the third level of analyses) with the remaining c-units that did not invite action showed that the dominance of mind-minded internal state references within the Vancouver subcorpus (and of body-minded internal state references within the Tanna subcorpus) was maintained ($\chi^2(1) = 50.09, p < .001$, Cohen's $w = .57$). In other words, when our Vancouverite caregivers referred to their toddlers' internal states outside of the context of activity building (e.g., “Do you like the mirror?”, “Can you feel it?”, “Do you know the next verse?”), they still showed a preference for referring to toddlers' mind (i.e., thoughts, desires, abilities, emotions).

It is likely that for the sample that we recruited (highly educated urban Canadians interested in participating in a study on self-development), the practice of refraining from making direct action requests and citing the interlocutor's desires or volition during the invitation was motivated by politeness. Politeness norms are morals regarding how the feelings of others should be interactionally treated (Brown, 2015), therefore, inform us about cultural models of self. In this case, we can argue that Vancouverite caregivers have been using a communicative style that accentuated the *do not impose* rule (Lakoff, 1973) to protect child's agency or to create a dyadic atmosphere of equal partnership. Nevertheless, this usage might affect toddlers' self-related experiences. We argue that linking desire or ability to an act may be a particularly efficient way to construct a meaning for those internal states as the representation of the child's

psychological stance toward the world is embodied through action. For this reason, coding these c-units as action (instead of internal state) would have been a misrepresentation of the data and fail to provide an accurate description of the developmental context of self.

And finally, our free play procedure did not elicit much spontaneous past talk for this age group. But even so, differences were observable. Our Vancouverite caregivers produced more past talk than Tannese caregivers who almost entirely stayed in the present. When our Vancouverite caregivers referred to past events, they referred to recent events rather than distant ones. For example, they took the opportunity to talk about the MSR test that was conducted prior to the free-play session “What did you see in the mirror?”. We again referred to our data with older Tannese children to estimate whether the lack of past tense use was age-specific. We observed that the same short free play session elicited more past talk between caregivers and their young children. For example, a mother said to a 30-month-old: “Look, grandma’s mirror. You saw yourself? Did you see the dirty on your forehead? And then wiped it off?”

Overall, we observed that the referential content of child-directed speech was remarkably different in the corpora produced by our Vancouverite and Tannese caregivers. The developmental consequences of such differences can be significant for the age group we studied. In the [Introduction](#) section, we explained that interacting through language involves participating in a joint attention triangle; that is, the words refer to the object of the partners’ joint attention. Joint attention episodes where children coordinate their perspectives with that of their social partner have been linked to the emergence of a self-concept (Moore, 2007; Müller & Runions, 2003; Rochat, 2009; Tomasello, 1999). These hypotheses are rooted in relational theories which posit that self-awareness involves taking a third-person perspective toward oneself (Cooley, 1902/1964; Mead, 1934/1967). Of particular interest are cases where caregivers focus their attention directly on the toddler rather than an object in the environment, rendering the toddler as the object of the dyad’s joint attention (Tomasello, 1999). Imagine that a mother is asking her 18-month-old whether she feels too warm, asks her whether she would like to remove her sweater, and then helps her. The mother may touch her daughter’s skin, draw attention to her sweat, and request the toddler to lift her arms. In this interaction, the toddler (i.e., her physiological state, desire, wear, and body parts) is the object of joint attention. In Cebioğlu & Broesch et al. (2021), we referred to these interactions as joint attention to self. It is possible that by frequently referring to their toddlers’ internal states (and to their tangible characteristics), our Vancouverite caregivers were directing their toddler’s attention to themselves and facilitating the emergence of a conceptual self. To better understand the developmental process, we invite our readers to ask themselves the following question: how

might the words that toddlers hear from their caregivers help them develop an idea of *me*? We do not think that it is about hearing particular words, per se. A child who has not yet developed a self-concept cannot use language as a tool to think about the self. After all, words without meaning are “empty sounds” (Vygotsky, 1934/1962, p. 120). Based on a perspective of language as activity (i.e., Carpendale & Lewis, 2004; Ochs & Schieffelin, 1984; Vygotsky, 1934/1962; Wittgenstein, 1958), we argue that the shared plane of heard speech and cognition is the pragmatic meaning of the communicative exchange. Within social interaction, toddlers gain access to the *meaning* of a self, a foundational element of both thought and language (Vygotsky, 1934/1962).

Something important to consider here is the extent to which speech content reflects the object of the dyad’s joint attention and whether there are cross-cultural differences in this regard. In the [Method](#) section, we described the games played between caregivers and their toddlers. Many aspects of these games seemed to promote self-awareness yet the lyrics were either non-lexical (e.g., the *ninginingitonga*) or did not make reference to the child (e.g., the wheels on the bus). In the *ninginingitonga* game, the players built a hand-tower which pointed at each player one by one, making the child who was being pointed at the object of the group’s joint attention. During her experiences of playing this game with children, the first author observed that whenever it was a child’s turn to be pointed at, their eyes glowed with excitement, as this was a perfect moment to stand out as a separate person. In the wheels on the bus game, the toddlers and the caregivers sat down facing each other and coordinated their motions. While playing, toddlers often fell behind or failed to perform the correct motion which they soon recognized and modified to match the caregiver, a perfect exercise for bodily self- and other-awareness. In Cebioğlu and Broesch (2021), we found that imitative interactions like those described in the wheels on the bus game predicted MSR in toddlers. In this paper, our goal was to demonstrate that the referential content of child-directed speech can be used as a tool to capture the extent to which toddlers became the object of the dyad’s joint attention. The fact that Tanna and Vancouver corpora differed from each other in the expected directions supports the efficiency of this method. However, it would be ideal to complement this approach with other observational methods to get a multi-dimensional representation of children’s social experiences.

While we believe the findings are compelling, our study has some limitations. A significant limitation was reliance on translated text in Tanna. We were also not able to provide any glossed excerpts making it impossible for a Natar-speaking reader to evaluate our examples. It would have been ideal if the interactions were transcribed and coded in the original language. This task requires a level of expertise that is rare among

the psychologists working in the field. Yet, it could be possible with researchers' increased immersion in the culture and the language, investing in capacity building for potential local collaborators, and forming collaborations with linguists currently working in the region. We strongly recommend future researchers to take these steps. Another limitation is that our observations were made during a short (5 min) parent-toddler free play session. Even though, as we explained earlier, mothers are primary caregivers in both societies over the first 2 years of life, there could be more exposure to secondary caregivers from all age groups in Tanna as grandparents and other family members are readily available to support the mother in childcare. Natural observations will provide an overall better representation of children's natural interactions in both societies. Furthermore, a more emic approach to the socialization of relatedness in Tanna will be a welcoming addition to the literature. This requires conducting interviews and focus groups with caregivers in Tanna to understand the local conceptions of the relationship between the self and others and how these conceptions reflect on parenting strategies throughout children's development. Although we conceptualized linguistic reference as a representation of the object of the dyad's joint attention, we only coded maternal input. We recommend future researchers to identify whether the references matched the dyad's joint attention to better represent child's participation in the process. Finally, because we chose to analyze the data at the corpus level, our capacity to generalize the results was limited. That being said, in Tanna, we tested all of the toddlers who lived in the communities we were allowed to recruit from. This gives us confidence in terms of representing the practices of the targeted cultural group.

Despite these limitations, this study offers a valuable contribution to the literature by documenting language interactions from an underrepresented language community and age group. Moreover, the conceptualization of language interactions we adopted (i.e., a participatory process that offers opportunities to attend to the self) as well as the coding approach we proposed (i.e., using referential content as a unit of analysis) offer new possibilities to understand the relations between language interactions, concept formation, and children's self-development.

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CONFLICT OF INTEREST

We have no conflicts of interest to disclose.

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