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## CULTURAL MODELS OF INFANT EMOTIONS AND NEEDS AMONG THE GAMO PEOPLE OF SOUTHERN ETHIOPIA

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**ABSTRACT:** How mothers perceive their infants' emotions and their subsequent responses are influenced by cultural values and beliefs. Mothers who live in particularly harsh environments may have perceptions about their infants' emotions that reflect not only cultural values but also constraints of the environment. In this qualitative study, 29 Gamo mothers living in rural Ethiopia were interviewed about perceptions of their infants' emotions, how they felt about these emotions, and what they believed their infants needed in response. Through constant comparative analysis and thematic coding, several patterns emerged in mothers' perceptions about their infants' emotions and what constituted appropriate responses. Mothers said that their infants' negative emotions were possibly related to illness and that appropriate responses were focused mostly on breastfeeding, complementary food, and needing to be held. Mothers also discussed their work demands and how they conflicted with their desire to respond to their infants; however, many mothers said that they relied on their older children to help. Mothers' responses were centered on a parenting strategy aimed at promoting infant health and survival, which is consistent with research on parents living in rural environments who subsist by farming and have relatively high risk for infant mortality.

**Keywords:** Ethiopia, cultural model, infant emotion

**RESUMEN:** Los valores y creencias culturales influyen la manera como las madres perciben las emociones de sus infantes y sus respuestas subsecuentes. Las madres que viven en ambientes particularmente hostiles pudieran tener percepciones acerca de las emociones de sus infantes que reflejan no sólo los valores culturales sino también las restricciones del entorno. En este estudio cualitativo, 29 madres Gamo residentes en Etiopía fueron entrevistadas acerca de sus percepciones de las emociones de sus infantes, cómo se sentían acerca de estas emociones, y qué creían ellas que sus infantes necesitaban a manera de respuesta. A través de constantes análisis comparativos y codificaciones temáticas, surgieron varios patrones en las percepciones que las madres tenían acerca de las emociones de sus infantes y lo que constituía respuestas apropiadas. Las madres dijeron que las emociones negativas de sus infantes estaban posiblemente relacionadas con la enfermedad y que las respuestas apropiadas estaban enfocadas primordialmente en el proceso de amamantar, alimentos complementarios y la necesidad de ser llevado en brazos. Las madres también explicaron los requerimientos de su trabajo y cómo los mismos estaban en conflicto con su deseo de responder a sus infantes; sin embargo, muchas madres dijeron que ellas confiaban en la ayuda de sus hijos mayores. Las respuestas de las madres se centraron en una estrategia de crianza dirigida a promover la salud y supervivencia del infante, lo cual es consistente con la investigación acerca de progenitores que viven en entornos rurales que subsisten por medio de la agricultura y tienen un riesgo relativamente alto de mortalidad infantil

**Palabras claves:** Etiopía, modelo cultural, emoción infantil

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We thank the Gamo community of the Gamo-Dorze highlands for the gracious support of our research. We also are grateful for help from the Department of Sociology and Social Anthropology, College of Social Sciences and Humanities, Arba Minch University. This research was supported by Grant 5T32HD007109-37 from the Eunice Kennedy Shriver National Institute of Child Health and Development to Lauren R. Bader; the W.K. McClure Scholarship for the Study of World Affairs; and the Bill and Sylvia Moore Fund, Scholarly Activity and Research Incentive funds, and Strategic and Transformative Investments in Research funds from the University of Tennessee. We have no conflicts of interest to declare. The Institutional Review Board at the University of Tennessee approved all research procedures.

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**RÉSUMÉ:** La manière dont les mères perçoivent les émotions de leurs bébés et leurs réactions qui s'en suivent sont influencées par les valeurs et les croyances culturelles. Les mères qui vivent dans des milieux particulièrement durs peuvent avoir des perceptions des émotions de leurs bébés qui reflètent non seulement des valeurs culturelles mais aussi les contraintes de leur milieu, de leur environnement. Dans cette étude qualitative, 29 mères Gamos vivant dans l'Éthiopie rurale ont été interviewées à propos de leurs perceptions des émotions de leurs bébés, ce qu'elles ressentaient à propos de ces émotions, et ce dont elles croyaient que leurs bébés avaient besoin en réponse. A travers une analyse comparative constante et un codage thématique, certains patterns ont émergé dans les perceptions des mères des émotions de leurs bébés et ce qui constituait des réactions, des réponses appropriées. Les mères ont indiqué que les émotions négatives de leurs bébés étaient peut-être liées à une maladie ou que les réponses appropriées étaient dans l'ensemble focalisées sur l'allaitement au sein, de la nourriture complémentaire et le besoin d'être tenu. Les mères ont aussi discuté les exigences de leur travail et la manière dont celles-ci présentaient un conflit avec leur désir de répondre à leurs bébés. Cependant beaucoup de mères ont dit qu'elles se reposaient sur l'aide de leurs enfants les plus âgés. Les réponses, les réactions des mères étaient centrées sur une stratégie de parentage destinée à promouvoir la santé du bébé et sa survie, ce qui s'aligne avec les recherches sur les parents vivant en milieux ruraux qui subsistent grâce à la petite agriculture et qui ont un risque relativement élevé de mortalité du nourrisson.

**Mots clés:** Éthiopie, modèle culturel, émotion du nourrisson

**ZUSAMMENFASSUNG:** Wie Mütter die Emotionen ihrer Säuglinge wahrnehmen und wie sie darauf reagieren, wird von kulturellen Werten und Überzeugungen beeinflusst. Mütter, die in besonders rauen Umgebungen leben, mögen Auffassungen über die Emotionen ihrer Säuglinge haben, die nicht nur die kulturellen Werte, sondern auch die Einschränkungen der Umwelt widerspiegeln. In dieser qualitativen Studie wurden 29 Mütter der Gamo, die im ländlichen Äthiopien leben, befragt, wie sie die Emotionen ihrer Säuglinge wahrnehmen, wie sie sich in Bezug auf diese Emotionen fühlen und was sie glauben, was ihre Säuglinge als Reaktion darauf benötigen. Durch ständige vergleichende Analysen und thematische Kodierungen entstanden verschiedene Muster bezüglich der Auffassungen der Mütter über die Emotionen ihrer Säuglinge und über angemessene Reaktionen. Die Mütter berichteten, dass die negativen Emotionen ihrer Säuglinge möglicherweise mit einer Krankheit zusammenhängen und dass sich angemessene Reaktionen vor allem auf das Stillen, die Beikost und die Notwendigkeit, sie zu tragen, konzentrieren. Die Mütter diskutierten auch über ihre Arbeitsanforderungen und wie sie mit ihrem Wunsch, auf ihre Säuglinge zu reagieren, in Konflikt gerieten; viele Mütter sagten jedoch, dass sie sich auf ihre älteren Kinder als Unterstützung verlassen würden. Die Antworten der Mütter konzentrierten sich auf eine Erziehungsstrategie zur Förderung der Gesundheit und des Überlebens von Säuglingen, die mit der Forschung über Eltern, die in ländlichen Gebieten leben, von der Landwirtschaft abhängig sind und bei denen ein relativ hohes Risiko für Kindersterblichkeit vorliegt, im Einklang steht.

**Stichwörter:** Äthiopien, Kulturmodell, kindliche Emotionen

**抄録:** 母親たちが乳幼児の感情をどう認識してそれに応じるか、は、文化的価値観や信念の影響を受ける。特に厳しい環境に暮らす母親は、乳幼児の感情を、単に文化的価値だけでなく環境による制約を反映するものにとらえるかもしれない。この定性的研究では、エチオピアの農村に住む29人のガモ族の母親が、自分の乳幼児の感情への認識や、自分の感じ方、また乳幼児がどんな応答を必要とするかについてインタビューを受けた。一定の比較分析と主題コード化を通して、母親が乳幼児の感情をどうとらえ何が適切な反応を構成すると思うかについて、いくつかのパターンが判明した。母親たちは、乳児の否定的な感情は多くの場合病気に関連している、適切な対応は母乳をあげること、またはそれを補う食物をあげること、抱っこすること、が適切な対応であると述べた。母親たちは仕事の荷が重いこと、自分たちの願うように赤ん坊に対応してやれない葛藤を抱えていることも話し合った。しかし、多くの母親は年上のきょうだいの助けを期待していると語った。母親たちの反応は、乳幼児の健康と生存の増進のための戦略が中心であり、これは、農業で暮らし、乳児死亡率のリスクが比較的高い農村環境の親の研究と一致する。

**キーワード:** エチオピア, 文化モデル, 乳幼児の感情

**摘要:** 母親如何感知嬰兒的情緒及其隨後的反應, 受到文化價值觀和信仰的影響。生活在特別惡劣環境中的母親可能對嬰兒的情緒有所了解, 這些感受不僅反映其文化價值, 也反映環境的限制。這項定性研究, 訪問居住在埃塞俄比亞農村地區的29名加莫母親, 了解她們對嬰兒情緒的看法、她們對這些情緒的感受, 以及她們認為嬰兒需要如何回應。通過不斷的比較分析和主題編碼, 母親對嬰兒情緒的看法以及適當反應出現幾種模式。母親認為嬰兒的負面情緒可能與疾病有關, 並認為適當的反應集中在母乳喂養、補充食物和嬰兒需要被抱。母親還討論她們的工作要求, 以及這些要求與回應嬰兒的願望發生衝突; 然而, 許多母親說她們依靠年齡較大的孩子來幫忙。母親的回應集中於促進嬰兒健康和生存的育兒策略, 這與生活在農村環境以農業為生, 嬰兒死亡風險相對較高的父母之研究一致。

**關鍵詞:** 埃塞俄比亞, 文化模式, 嬰兒情感

ملخص: تتأثر تصورات الأمهات عن عواطف أطفالهن واستجابتهن اللاحقة بالقيم والمعتقدات الثقافية. فالأمهات اللاتي يعشن في بيئات قاسية على وجه التحديد قد يكون لديهن تصورات بشأن عواطف الرضع قد لا تعكس القيم الثقافية فحسب، بل أيضا قيود وخصوصيات تلك البيئة. في هذه الدراسة الوصفية، أجريت مقابلات مع 29 من الأمهات داخل مجتمعات الجامو واللاتي يعشن في المناطق الريفية في اثيوبيا بشأن تصوراتهن لعواطف أطفالهن الرضع، وكيف شعرن بهذه العواطف، وما يعتقدن ان أطفالهن يحتاجون اليه استجابته لذلك. ومن خلال التحليل المقارن الثابت وتكويد المواضيع، ظهرت عده أنماط في تصورات الأمهات بشأن عواطف أطفالهن الرضع وما يشكل استجابات مناسبة في المواقف المختلفة. وقالت الأمهات ان العواطف السلبية للرضع قد تكون مرتبطة بالمرض وان الاستجابات المناسبة تتركز في معظمها على الرضاعة الطبيعية والغذاء التكميلي وحاجة الطفل لأن تحمله أمه. وناقشت الأمهات أيضا متطلبات عملهن وكيفية تعارضها مع رغبتهن في الاستجابة لأطفالهن؛ بيد ان كثيرا من الأمهات أوضحت أنهن يعتمدن على أطفالهن الأكبر سنا للمساعدة. وتركزت استجابات الأمهات على استراتيجيات الرعاية الالديه التي تهدف إلى تعزيز صحة الرضع وبقاءهم، والتي تتسق مع البحوث المتعلقة بالآباء الذين يعيشون في بيئات ريفية ويعتمدون على الزراعة ولديهم مخاطر عالية نسبيا من حيث وفيات الرضع.

الكلمات الرئيسية: اثيوبيا، النموذج الثقافي، عاطفه الرضع

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Cultural models of parenting practices are influenced by many aspects of an infant's environment, including the physical and social environment as well as cultural values and customs shared by members of a society. Researchers have described cultural models of many aspects of parenting among various cultures (Fouts, Hewlett, & Lamb, 2012; Hewlett, Lamb, Leyendecker, & Schölmerich, 2000b; Keller et al., 2006; Keller & Otto, 2009; Yovsi & Keller, 2003), but specific cultural models related to infant emotion have been investigated and identified to a lesser extent. Shared beliefs or interpretations of events or behaviors that are socially transmitted among a group of people with shared life experiences are encompassed within cultural models (Strauss & Quinn, 1997). For example, cultural models of particular aspects of parenting (i.e., breastfeeding, weaning, holding) contain parents' beliefs about what is best for infants within their environment of development (Fouts et al., 2012; Hewlett et al., 2000b; Keller et al., 2006; Keller & Otto, 2009; Yovsi & Keller, 2003). The purpose of this study is to identify the cultural model of infant emotion and needs among Gamo mothers in Southern Ethiopia and to connect this model with broader cultural models of parenting and foundational schema as well as aspects of Gamo infants' developmental niche.

## CULTURAL MODELS AND FOUNDATIONAL SCHEMA

Cultural models stem from and are structured by broader foundational schemas (i.e., core values and beliefs) within societies (Shore, 1996). Foundational schemas are deeply held core values, such as egalitarianism, independence, autonomy, and gender and age hierarchy, and are intertwined in and influence many facets of people's daily lives (Shore, 1996), including parenting behaviors. Foundational schema have been related to aspects of parenting, such as breastfeeding (Fouts et al., 2012; Yovsi & Keller, 2003), infant carrying (Lozoff & Brittenham, 1979), and weaning (Fouts, Hewlett, & Lamb, 2005; Meehan & Roulette, 2013). Cultural models are organized under foundational schema and are related to one another through foundational schema (Shore, 1996).

## THE DEVELOPMENTAL NICHE

The developmental niche is another theoretical framework for understanding how culture guides behavior. It organizes parenting

beliefs and goals and highlights the influence of cultural customs and physical and social aspects of an infant's environment on infant development. The developmental niche combines anthropological and psychological theories of child development to understand how children develop throughout the life span and how culture structures this development (Super & Harkness, 1986). The developmental niche includes three subsystems that concurrently influence how a child develops within context: physical and social settings, customs of childcare, and psychology of caretakers (Super & Harkness, 1986). Physical and social settings can include the nature of relationships between people within societies (e.g., sibling and allocaretaking) and aspects of the physical environment that structure a child's activities (e.g., school, a child's involvement in work or subsistence). Customs of childcare can include the nature of infant carrying, infant sleeping, and parents' encouragement of infant walking. Parental ethnotheories are subsumed under the third subsystem of the developmental niche, psychology of caretakers, and include parental beliefs about particular infant behaviors and how children should develop as well as how parents should respond to their infants (Super & Harkness, 1986). Subsystems of the developmental niche can be used as a framework to organize cultural models of infant emotion and needs, and demonstrate the ways in which subsystems are intertwined and influence one another. One goal of the current study is to explore the impact of parental ethnotheories of infant emotion on responses to infants as well as examine how foundational schema, physical and social aspects of the environment, and cultural customs relate to parental ethnotheories about infant emotion.

## HIERARCHY OF PARENTING STRATEGIES

Parents' beliefs about their infants and their emotions relate to their child-rearing goals. According to LeVine (1980), the environment in which a child develops impacts the goals of the parents for the child. In the harshest environments, parents' concern tends to focus on infant health and survival. If survival is assured, parents may invest in economic achievement and attempt to enhance a child's ability to accomplish cultural values (e.g., education and wealth) (LeVine, 1980). How parents view their infants' emotional displays may reflect larger parenting strategies that are influenced by

environmental constraints (e.g., the likelihood of their infant surviving in the current environment), which is in line with LeVine's (1980) framework. However, LeVine's (1980) adaptationist model that attributes variations in parental investment among farming and urban-industrial societies to infant mortality risk may be too simplistic (Hewlett & Lamb, 2002; Hewlett et al., 2000b). Hewlett et al. (2000b) found that European American and Ngandu (agriculturalists) parents demonstrated some similar parenting behaviors (e.g., infant feeding), but Aka (foragers) parents, which share a similar risk of infant mortality to that of Ngandu farmers, oftentimes demonstrated parenting behaviors (e.g., infant feeding and holding) that were substantially different from both Ngandu and European American parents. Furthermore, Aka and Ngandu parents believed that crying would lead to illness, but Aka parents were more responsive to their infants' displays of distress (Hewlett & Lamb, 2002). Hewlett and Lamb (2002) suggested that cultural values and beliefs might contribute to these differences in responses to infants. The Ngandu value respect and deference toward others and may let infants cry for a longer period of time to help infants develop respect for the needs of others whereas Aka value sharing and emotional closeness, possibly leading to quick responses to infant fussing and crying (Hewlett & Lamb, 2002). This prompted Hewlett and Lamb to suggest that cultural models of parenting be included in explanations of parental investment in particular contexts.

### ATTACHMENT PERSPECTIVES

Daily mother–infant interactions influence how infants will relate to other individuals outside of the mother–infant relationship (Ainsworth, 1972; Draper & Belsky, 1990). These early interactions, whether they are characteristic of secure or insecure mother–infant interactions, help infants develop internal working models (IWMs) (Bowlby, 1969; Bretherton & Munholland, 2008) that may be involved in predicting future social interactions (Draper & Belsky, 1990). Thus, early insecure and secure attachment relationships may prepare children for different life course trajectories (e.g., mistrustful/trustful IWMs, early/delayed puberty) and reproductive strategies that are equally advantageous in reproductive outcomes (Belsky, Steinberg, & Draper, 1991; Draper & Belsky, 1990; Hochberg & Belsky, 2013; Lamb, Thompson, Gardner, & Charnov, 1985; Lamb, Thompson, Gardner, Charnov, & Estes, 1984). Furthermore, what infants learn through their secure base relationships may differ between contexts. Hewlett, Lamb, Leyendecker, and Schölmerich (2000a) found that differences in early caregiver–infant interactions among the Aka foragers, Ngandu farmers, and European Americans related to distinct cultural values and beliefs. For example, Aka infants were more likely to be held and responded to sensitively when fussing and crying, which Hewlett et al. (2000a) hypothesized led to the development of a trusting IWM and reflected the Aka cultural value of trustful and sharing relationships (Hewlett et al., 2000a).

The makeup of the mother–infant attachment relationship also appears to differ from Western contexts of development in harsh environments where cultural practices linked to attachment rela-

tionships also are influenced by the environment. For example, Kermoian and Leiderman (1986) found that the nature of the secure attachment relationship differed between mothers and child caretakers among the Gusii of Kenya in that secure attachment relationships were linked to nutritional status for mother–infant pairs and, conversely, cognitive performance for child caretaker–infant pairs (Kermoian & Leiderman, 1986). Likewise, McMahon True, Pisani, and Oumar (2001) found that avoidant attachment was nonexistent between Dogon (Mali) mothers and infants, which they explained was due to the connection between the infants' attachment and their reliance on their mothers for food (i.e., breastfeeding). Thus, an avoidant attachment relationship would be detrimental to an infant's health in this context.

Many of the tenets of attachment theory have been both supported and questioned (Keller, 2013; Otto & Keller, 2014; Quinn & Mageo, 2013; Takahashi, 1990; van IJzendoorn & Kroonenberg, 1988; van IJzendoorn & Sagi-Schwartz, 2008), but overwhelmingly, researchers have called for further consideration of cultural context in the development of infant attachment relationships (Keller, 2013; van IJzendoorn & Sagi-Schwartz, 2008). Researchers have acknowledged that attachment relationships have been shown to develop differently in different contexts (Gottlieb, 2004; Harwood, Miller, & Irizarry, 1995; Weisner et al., 1977), but the incorporation of these cross-cultural findings has yet to influence the tenets and hypotheses of attachment theory as well as the methodology (Otto & Keller, 2014).

Infant emotions and responses to those emotions are central to attachment theory, and this study will explore the cultural model of infant emotion and needs among one small-scale, non-Western culture, the Gamo, and identify various beliefs about infant emotions and related parenting strategies and cultural values. Understanding how cultural groups conceptualize infant emotions and caregivers' roles in those emotions (i.e., expectations and responses) is fundamental for developing more cross-culturally informed theories or improving existing theories.

### PRESENT STUDY

The aims of the current study are twofold. First, we sought to identify the cultural model of infant emotion and needs by asking Gamo mothers about their subjective experiences with infant emotion, including how they feel and why they respond to their infants in particular ways. Researchers have drawn on interviews and focus groups with parents to identify cultural models of parenting (Borke, Lamm, Eickhorst, & Keller, 2007; Keller, Voelker, & Yovsi, 2005) other than cultural models about infant emotions. If cultural models guide other aspects of parenting, then parents' beliefs and subsequent responses to infant emotion also should reflect cultural models. Second, we examined how this aspect of parenting is connected to core Gamo foundational schema and aspects of the environment (e.g., physical and social) as well as Gamo parents' individual beliefs.

The current study draws on qualitative interviews and ethnographic field notes to examine Gamo mothers' beliefs about

infant development, including what children need for development and how and why mothers respond to certain infant emotions and behaviors. This qualitative analysis of mothers' subjective interpretations and responses to infant emotions provides a missing perspective on understanding the practices and goals of parents living in lesser studied contexts. Furthermore, this study argues for the inclusion of cultural beliefs into already existing dominant frameworks of parenting and child development (i.e., attachment theory, environmental risk, and parenting strategy models).

## METHODS

### *Ethnographic Context: Fieldwork in the Gamo Highlands of Southern Ethiopia*

This study stemmed from data collected during fieldwork in a small village in the Gamo-Dorze highlands of Southern Ethiopia in 2015 and 2016. The Gamo primarily subsist through agriculture using simple plows and some cattle as well as hand plows and live in the Gamo highlands of Southern Ethiopia. Men primarily plow the land while females plant seeds, carry cow manure to the fields for fertilizer, and harvest the crops. The Gamo mainly subsist on potatoes, wheat, barley, and a variety of beans, and most families have access to enset, a food staple (root crop) that they rely on during *Balgo*, the rainy season that the Gamo consider a time of hunger (The dry season, *Bonae*, is the time for harvesting many crops.) Although the Gamo rely heavily on agricultural products for food and income, many Gamo men also weave for extra income, and some women make goods such as jewelry to sell in local markets. Furthermore, the Gamo are stratified into two predominate social classes, the marginalized minority known as *Tsoma* (from here on referred to as the *lower class*), who unlike the *Mala* (the majority group), besides farming, subsist through hide working and blacksmithing. Gamo people from the lower class marry within their social class and hold low political and economic status in society (Arthur, 2008). They live in a designated area within the village known as *Godare* (translates to *hyena*—the Gamo are particularly scared of hyenas) that *Mala* tend not to visit. The lower class also have very little farmland and only use hand plows (No lower class participants in the surveyed village owned cattle for farming.) According to a village census taken in 2016, around 2,000 residents (49% male, 51% female) live in the surveyed village that is part of a system of villages within a larger region of the Gamo-Dorze highlands. Gamo society is patriarchal and hierarchically structured by age. Among the Gamo, inheritance of land is predominately patrilineal, and settlement following marriage is patrilocal. Men are viewed as the dominant authorities and control the family economy. Women are predominantly in charge of household duties such as cooking, cleaning, and childcare. Gamo children are generally socialized to be obedient and respectful of their parents and other members of the community. Most Gamo are religious Christians; however, some Gamo maintain a few traditional spiritual beliefs.

Gamo mothers spend a large majority of the day carrying their infant children on their backs in wraps, especially if the infant is

an only child and does not have an older sibling to carry them. Mothers carry their infants on their backs because it allows them to continue to work in the field or at home preparing food. Older siblings spend a lot of time caring for infants when mothers are working in the field or around the house. Infant caregivers quickly respond to infant fussing and crying, and whoever is close by the infant and hears the infant is expected to respond.

### *Participants*

Gamo families were recruited with the help of a local guide with knowledge of most families within the village. Along with birth records from the community health center, we identified families who matched the inclusion criteria of infants (between 1–11 months of age) and families with residential fathers. Participants consisted of 29 Gamo mothers with focal infants with residential fathers. Median age for infants was 5 months (interquartile range = 3–8 months). One mother was excluded from the study following the initial demographic interview because we discovered that her husband did not live in the village. All mothers were married, and 1 mother was in a polygynous family. Four mothers were from the lower social class. Median age for mother was 25 years (interquartile range = 23–28 years); however, Gamo mothers often seemed reluctant to reveal their ages, and some were unsure of their exact ages.

The total fertility rate among the Gamo is 6.34%; they have an infant mortality rate (birth–12 months) of 17.47%, and a child mortality rate (birth–15 years) of 29.58%. Mothers in this sample had a median of 3 children (interquartile range = 1–4 children) with the focal infants' fathers. Four mothers had experienced the death of a child. Mothers also varied in years of formal education (*Mdn* = 5 years; interquartile range = 0–9 years). During our focal-infant observations, mothers were observed working 43% (*Mdn*) (interquartile range = 29–58%) of the time, which usually included mothers planting or harvesting in their fields or cleaning or cooking in the home within eyesight of their infant.

### *Procedures*

Prior to data collection, the lead author spent a few days in the village meeting village elders to discuss the purpose of the study and visiting different areas of the community. The lead author is White and from the United States, and told the community with the help of a translator that her presence in the village was for research at a university and to learn about the lives of Gamo parents in the village. Data collection included demographic and semistructured parenting interviews with mothers, qualitative focal-infant field notes, and ethnographic field notes. Participants were provided with the details of the study and consented prior to the first interview. Parenting interviews with Gamo mothers were used to gather information about mothers' thoughts regarding their infants' emotions (i.e., crying, smiling, etc.) and what they believed to be the best response to their infants' emotional displays. Interviews also included questions about the infant's environment and what

it was like to raise an infant in this village. Interviews typically lasted between 30 and 45 min. The interviewer was not fluent in Gamo, so mothers' responses to interview questions were translated from Gamo to English with the help of a Gamo-speaking research assistant who is ethnically Gamo. The research assistant grew up and lives in a nearby town; however, he has extended family in the village and lived there for some of his childhood. He visits many times throughout the year, and many people in the village know him by name. Parenting interviews with mothers provided information regarding ethnotheories of infant development and emotion and allowed for the identification of mothers' focus when discussing infant emotions. The interviewer discussed the interview questions with the research assistant prior to conducting the study to assess the appropriateness of the questions, and a few revisions were made to the wording of some questions.

Qualitative focal-infant field notes consisted of information regarding the physical and social settings of the focal infant, caregiver engagement with the focal infant, and anything upon which the caregiver seemed to be focusing most of her energy (e.g., caregiver is talking to the focal infant, caregiver is working in the home, etc.). Field notes were based on 6 hr of observations per child (spread across 3 days) and were taken for 15 min at a time following a 45-min observation. Oftentimes, informal conversations with parents occurred and questions about particular parenting practices were raised; relevant conversations and answers to questions in field notes were documented. Broader ethnographic field notes were usually taken at the end of the day after completing home visits (interviews and observations) or between home visits. These notes included descriptions of situations, activities, and people encountered throughout the day, and were helpful in identifying foundational schema and cultural values of the Gamo.

### Data Analysis

*Coding of parenting interviews and focal-infant field notes.* After preliminary examination of parenting interviews and focal-infant field notes, we conducted a constant comparative analysis through reiterative readings of interviews and focal-infant field notes to identify preliminary themes in parenting beliefs and behaviors (Corbin & Strauss, 2008). We compared incidents of preliminary themes to identify similarities and differences to refine particular themes (Corbin & Strauss, 2008). Interviews and focal-infant field notes were then coded in NVivo 10 using codes created from the themes to classify mothers' statements. First, interviews and field notes were open coded in NVivo (Corbin & Strauss, 2008; Creswell, 2012). The authors modified the codes and themes based on discussions following open coding, and certain codes were identified as subthemes within larger themes. Coding of mothers' interviews allowed for the identification of the frequency at which mothers focused on certain cultural models or beliefs about infant emotion. Mothers' interview responses also were compared to ethnographic information from field notes (i.e., triangulation of data sources) to identify connections between interviews and

core values of Gamo culture, customs of childcare, and social and physical aspects of the environment.

*Strategies for trustworthiness.* Strategies to ensure trustworthiness of the data included extended engagement in the field, data triangulation, and identification of researcher bias (Creswell, 2012). Ethnographic fieldwork was completed over two 11-week periods in 2015 and 2016 and consisted of formal data collection (i.e., focal-infant observations and interviews with mothers), living in the community, and attending various events within the community. Data were triangulated through multiple types of data (i.e., interviews and field notes) to identify patterns in mothers' beliefs about their infants' emotions and responses to their infants' emotions. Furthermore, data were analyzed through the lenses of multiple disciplinary perspectives (i.e., psychology and anthropology) and multiple theoretical frameworks (i.e., developmental niche, hierarchy of parenting strategies, foundational schema, and cultural models).

## RESULTS

Gamo mothers' responses to questions about their infants' emotions and their subsequent responses resulted in the identification of six major themes: (a) mothers' perceptions of infant distress (i.e., crying and fussing), (b) mothers' work, (c) identification of emotion, (d) needs of a distressed infant, (e) material resources make infants happy, and (f) emotional contagion. Subthemes also emerged within three of the major themes (Themes 2, 4, & 6) that further characterized the major theme.

### Mothers' Perceptions of Infant Distress

Mothers reported that infant crying was often the result of physical illness, and besides a lack of adequate complementary food or enough clothing for warmth leading to physical illness, for example, some mothers expressed that their infant's physical illness was caused by a curse known as *gormate* ("evil eye"). During one observation, community members were observed praying over an uncontrollably crying young boy they believed had been cursed with *gormate*. During another observation, community members were observed forcing an intensely crying infant to drink a mixture of herbs and water to stop the crying. The Gamo are fearful of young children being overtaken with *gormate*. For example, infants are never observed without clothing and are quickly clothed after being bathed due to the fear that *gormate* has a greater chance of entering a naked baby. Evil eye also is known to influence other aspects of parenting such as breastfeeding in other countries (Wanjohi et al., 2017). Gamo babies also are often observed wearing beaded necklaces and bracelets to ward off *gormate*. In general, mothers' perceptions of why infants display distress were more apparent in ethnographic and focal-infant observations, but were rarely directly described by mothers during interviews.

Gamo caregivers were observed to respond relatively quickly to infant distress with breastfeeding, suggesting that displays of

infant distress may not be tolerated. Similarly among the Nso agriculturalists (Cameroon), Keller and Otto (2009) found that crying and expression of negative emotion were met with immediate and even anticipatory breastfeeding, arguing that expression of negative emotion possibly signaled sickness whereas an infant who did not cry displayed health. Crying infants also appeared to make the Gamo uncomfortable, especially mothers. During the first author's subsequent fieldwork trip to the village the following summer, mothers were observed to be very uncomfortable during anthropometric measurements of their young children. Many mothers knew that their children would fuss and cry prior to taking weight and height measurements.

Themes that emerged in interviews with mothers about infants' emotions focused on mothers' needs as well as the needs of their distressed infants. Mothers were less likely to elaborate on why infants might be distressed, especially if mothers told us that they thought their infants were cursed with evil eye due to a general uneasiness to discuss evil eye, but all mothers were able to explain what they would do to calm them. Furthermore, both positive and negative displays of emotion were met with similar responses (e.g., breastfeeding) by mothers.

#### **Mothers' Work: The Competing Demands of Mothers**

The conflicts between mothers' work demands and responsiveness toward their infants emerged as a major theme throughout interviews with mothers. Gamo women are heavily involved in agricultural work, and this does not slow after having a baby. Postpartum women stayed at home with their newborn infants for the first 3 to 4 weeks, but then continued work carrying manure to their fields and planting and harvesting crops. Women also were responsible for much of the cooking and childcare, and oftentimes mothers' responsibilities conflicted with the emotional needs of their infants. Two subthemes emerged when women discussed their work and raising young children.

*Mothers' inability to respond to their infants when working.* About half of mothers discussed their work demands in relationship to the needs of their infants. One mother commented on the conflict between her daughter's cries and her desire to work. Another mother commented on how her work interfered with her ability to get food herself and that this indirectly impacted her daughter:

**Mother 1:** Sometimes I leave him by working even if I hear him crying I leave him there.

**Mother 2:** She is crying a lot and it makes me very sad and stressed. I am begging God to give her more strength to sit and play by herself. That will make me a little bit free to work on other things. I'm also feeling sad when I see other kids that are the same age here as her and they are sitting, but my baby is still not.

**Mother 2:** She is not getting much food because of her appetite. She cries when she is very hungry because of that. Since I am working outside in the field, there is not

as much more time to prepare food for myself and because of that, my breast is not giving enough milk for her.

Although Gamo mothers worked throughout the day, many mothers mentioned that they would return home from their fields multiple times a day to breastfeed their infants. Some mothers were observed carrying their infants on their backs while collecting their farming products in their fields; however, much of a woman's workload required carrying manure to their fields for fertilizer and carrying the products from their fields on their backs to their homes. Thus, not all work performed by women allowed them to carry their infants on their backs while they worked. Mothers' distress over their inability to work if the needs of their infants were high suggests that mothers possibly preferred calm and content infants. This preference is further demonstrated in themes presented later (e.g., Mothers express stress if their infants are distressed and material objects are necessary to make infants content and happy).

*Importance of sibling caretaking.* Sibling caretakers were often essential to a mother's ability to work outside and within the home. For mothers who only had one child (the focal child), the absence of a sibling caretaker and the consequences on their ability to work was apparent in interview responses:

**Mother 3:** If he is more happy and playing, I make him sit and tell the other daughters to keep him and I go to my workplace.

**Mother 9:** If I go somewhere to work, she is spending time with her sisters and brothers.

**Mother 4:** If I go get wood or grass for cattle, she is taking care of her by giving the barley liquid. Also cleaning and carrying her.

Mothers described how sibling caretakers provided the majority of infants' needs, which included food, holding the infant, and playing with the infant. Sibling caretaking is a predominate practice among the Gamo, and older siblings are required to care for infants. Children deferred to their parents when asked to take care of their infant siblings. Sibling caretaking also provides opportunities to gain parenting skills.

#### **Identification of Emotion: "How Can I Know Whether He Is Sad or Not?"**

Some mothers had difficulty with the interview question: How do you know your child is sad? Mothers explained that they did not know when their infants were sad, and 1 mother even said that she did not think of her infant as sad. Many mothers responded by saying that regardless of the emotional display or signal, infants needed to be breastfed:

**Mother 3:** I don't know what kinds of feeling and emotions he has, but after I give him shower and breast, he sleeps.

**Mother 1:** I don't know what he needs, but I always give him the breast.

**Mother 8:** How can I know whether he is sad or not? If he is crying, I give him breast, but because he is not talking, how can I know if he is sad or not?

Mothers' beliefs that they cannot interpret the emotional feelings of their infants and, more so, the feelings of infants other than their own did not prevent mothers from stating what they believed to be the best response to their infants' emotions, especially agitation: breastfeeding, additional food, and holding. Gamo mothers did not seem particularly concerned with how infants feel when they are distressed but mothers were sure of what the best responses to their infants should be to calm them.

#### *Needs of a Distressed Infant: Feeding and Holding Make Infants Happy and Stop Them From Crying*

Mothers overwhelmingly said that the best way to respond to a fussy, crying, and distressed infant was through feeding and holding the infant, and that most of the time, these responses made the infant happy. Some mothers also discussed that additional food would most likely make their infants happy, but that because of a lack of money, additional food was not always possible.

*Breastfeeding.* Beliefs about infant emotion appeared to be centered on breastfeeding. Every mother interviewed except one discussed breastfeeding as an effective response to negative infant emotion and that breastfeeding caused infants to become happy. Some mothers even said happy infants needed breastfeeding as well:

**Mother 5:** Most of the time after breastfeeding, she becomes very happy, but before that, she is crying.

**Mother 5:** I give her the breast. Breastfeeding is the best thing.

**Mother 6:** Sometimes if he misses my breast, he becomes angry—that is the behavior he shows me sometimes.

**Mother 7:** Even if she is playing and happy, I give her my breast and feed her.

Breastfeeding in response to any infant emotion was described predominantly as a way to keep infants happy and quickly make an infant happy if distressed. Mothers were not the only individuals observed breastfeeding distressed infants; grandmothers as well as adult female neighbors were often observed breastfeeding (i.e., allonursing) if the mother was not around to calm the infant.

*Complementary feeding.* The majority of mothers responded to their infants' negative emotions by providing additional food to their infant, especially among older infants:

**Mother 10:** Maybe when he becomes 6 months or more, I will make him to eat and drink some additional foods. That will make him more happy.

**Mother 2:** Maybe she needs better [cow's] milk and egg also. We try to feed her these things regularly, but because the economic problem, we can't do it regularly.

**Mother 11:** I give her additional food which is made from the barley powder because the nurse told us to give additional food after 6 months.

Mothers were very aware that at the age of 6 months, infants needed complementary food; some mothers said that this additional food would be necessary to keep their infants happy. Mothers with younger infants even discussed that breastfeeding was the best way to calm an infant, but that additional food would be necessary when the infant got older (age 6 months). Gamo mothers reported that complementary food was necessary for infant health and development, and many mothers expressed concern over their inability to provide this food for their infants. One mother even commented that her child was smaller than she should be because they could not provide her with the food that she likes to eat. These responses suggest that child health and survival are major concerns among the Gamo and reflect the goals of parents living in environments with high environmental risk.

*Holding.* Many mothers discussed holding their infants when they displayed a variety of emotions. Mothers also said that holding their infants kept them from crying and being sad:

**Mother 8:** Since I carry most of the time, I do not think he is very sad.

**Mother 10:** When he starts smiling and laughing, I hold him and am smiling and laughing with him.

**Mother 12:** Most of the time when he cries, I give him breast and carry him.

**Mother 8:** If I keep him on the ground, he starts crying, and if I carry him, he stops crying.

Mothers of some of the youngest infants described how they needed to be held throughout the entire day. If mothers carried infants for an extended period of time, they were carried on the mother's back in a wrap, which allowed mothers to continue to work while keeping their infants calm.

#### *Material Resources Make Infants Happy*

About half of Gamo mothers expressed the desire for their infants to have play materials and that these items were important for infant happiness. Many mothers also said that they knew that play things would make their infants even happier, but that they could not afford to buy these items for their children:

**Mother 13:** Maybe she misses something that makes her happy, that is why I give her the play things.

**Mother 4:** We couldn't fulfill some things she needed that makes her more happy like playing material and shiny things also the baby rattle because those things can make the baby more happy.

**Mother 14:** Maybe she needs some other playing material—maybe those that make sound.

Providing infants with play objects was mostly discussed as a way to make content infants happy. One mother stated that if her infant



was happy, she didn't need anything, but if she had play materials, maybe she would be happier.

### *Emotional Contagion*

The majority of mothers mentioned being stressed or angry in response to infant crying and that oftentimes if their infants were sad, they were sad as well; however, mothers also mirrored their infants' happiness.

#### *Mothers expressed stress or anger in response to infant emotion.*

The majority of mothers said that they were either stressed or angry or both at their inability to stop their infants' crying. Mothers said that they were often angry with themselves as well as angry with their infants:

**Mother 7:** Sometimes it makes me very stressed and sometimes it also makes me angry. Sometimes it makes me want to beat her.

**Mother 10:** When he is sad, most of the time he cries, and it makes me very angry.

**Mother 2:** It makes me very stressed, especially when she cries a lot and does not want to take my breast. It makes me also angry.

Mothers' stress in response to their infants' emotions was one of the more prevalent themes running through interviews with mothers. This stress likely stemmed from the conflict between infant care and work, as infant crying and mothers' desires to calm their infants impeded a mother's ability to work. One mother mentioned that her daughter cried a lot, more than other children her own age, and that this prevented her from being able to work. Some mothers responded that they would take their infants to traditional healers or to the health center if their infants cried a lot because they believed that something may be physically wrong with the infants. This supports that idea that fussing and crying demonstrated infant vulnerability to physical illness or the evil eye curse. Within Gamo culture, individuals believed to be cursed with evil eye are often ostracized from the rest of the community, so an infant's display of excessive crying and fussing could have suggested to others within the community that the infant had been cursed with the evil eye, which could have detrimental effects on the infant.

*Mothers express their infants' happiness and sadness.* Many mothers also expressed feeling sad when their infants appeared sad, but also happy if their infant appeared content or happy.

**Mother 15:** It makes me very happy since he is playing and laughing because of his happiness, that also makes me very happy.

**Mother 16:** It makes me very sad—like I am burning inside.

**Mother 3:** Most of the time if I am here, she is not crying because I give him breastfeeding when she wakes, but sometimes if I hear his crying, since I am his mother, it makes me very sad.

Emotional contagion was a prominent theme throughout interviews with mothers and could be related to the idea that a happy infant allowed a mother to work or that a sad infant may be sick and needed to be taken to the health center or a traditional healer. Mothers expressed both scenarios.

## DISCUSSION

Cultural models of infant emotion and needs appear tied to the social and physical environment in which Gamo infants live. Environmental pressures lead to strategies in child-rearing that become cultural custom (LeVine, 1977). Some mothers stated that infant emotions such as fussing and crying were the result of physical illness. According to mothers, physical illness was sometimes linked to evil eye. Evil eye is common throughout many parts of Africa (Gershman, 2016; Reminick, 1974), and researchers have documented cultural beliefs about protecting infants from exposure to evil eye in Ethiopia (Mariam & Sterky, 1973). Gamo mothers did discuss that infant fussing and crying could lead to their infants being cursed with evil eye. Regardless of why infants were fussing or crying, mothers used these signals to respond. Mothers responded to infant fussing and crying because they said that their infants could be sick or could become sick as a result. Thus, in an environment with high infant mortality like that among the Gamo, mothers' statements about needing to quickly respond to fussing or crying infants may reflect concern about illness and disease.

Gamo mothers also discussed concern over their desire and need to work, and how this desire and need conflicted with their role as primary caregiver to their young children in the theme "Mothers' work: The competing demands of mothers." Gamo mothers work in the fields to provide food for their families and are essential to their families' survival. Although some mothers were observed working in their fields while carrying the infants in wraps on their backs, the majority of infants were observed at home with sibling caretakers while their mothers completed subsistence work.

Responsiveness to negative infant emotionality appears to be the responsibility of many individuals who are a part of an infant's development niche. Siblings are especially important, and mothers often rely on siblings to care for infants so mothers can continue to work. This reliance on sibling caretaking was prominent among the Gamo and is a characteristic of many "production-enhancing" societies throughout the world (Blurton Jones, 2002; LeVine, 1977; Weisner et al., 1977). When infants cried or fussed, Gamo mothers often expressed their dissatisfaction of this emotional display through their verbal response to their infants. Mothers often sternly say "awa!?" ("What!?!") to their infants when they have a negative emotional display and in a tone that seemed to imply their desire for the infant to stop crying and fussing. Keller and Otto (2009) described similar verbal discontent of infant fussing and crying among working Nso mothers. A calm Nso infant is preferred because it allows for mothers to complete their work (Keller & Otto, 2009). Furthermore, in a cross-cultural comparison between Nso and U.S. mothers, U.S. mothers said that they responded to crying infants with breastfeeding because they thought their infants

were hungry whereas Nso mothers, similarly to Gamo mothers, anticipatorily breastfed their infants to keep them calm (Keller & Otto, 2009). Furthermore, breastfeeding was the primary response to infant distress among the Gamo, similarly to Dogon mothers' responses to infant distress, and according to McMahan et al. (2001), promoted infant health. Due to the frequency with which Dogon mothers breastfed, McMahan et al. hypothesized that the lack of identified avoidant attachment could be linked to the amount of contact between Dogon mothers and their infants.

Relatively quick responsiveness to negative infant emotionality also may reflect the emotion socialization goals of Gamo mothers. Quick responses to negative infant emotion and less emphasis on positive emotionality could reflect the desire to impart interdependence and a sense of communality (Keller et al., 2004) among Gamo infants. Sidama (Ethiopia; agropastoralists) infants were observed to display less positive emotionality as compared to U.S. infants (Gartstein, Bogale, & Meehan, 2016), which is consistent with what we observed among Gamo infants. Furthermore, positive emotionality toward infants is often expressed less among mothers in non-Western contexts (Whiting & Edwards, 1988). What parents desire for their children varies between societies, and parents in Western societies tend to discuss affection, love, and enjoyment when talking about their relationships with their children (LeVine, 1977) whereas societies living in harsh environments such as the Gamo tend to focus on the health and welfare of their infants and describe acts such as infant holding as a way to calm a distressed infant. Mothers are mostly concerned with the physical health and needs rather than with the positive emotional responsiveness of their infants (LeVine, 1977). Gamo mothers did discuss the happiness and sadness of their infants, but this was in relationship to feeding, holding, and material resources such as objects/playing materials.

Gamo mothers also displayed other maternal parenting behaviors reminiscent of other Sub-Saharan agricultural societies, including frequent breastfeeding in infancy, breaking off suckling bouts to return to work, and occasionally ignoring the cries of their infants as well as calling for another child to respond to the infant (Draper & Harpending, 1987; Fouts, 2010; Fouts et al., 2012; Hewlett et al., 2000b; Weisner et al., 1977). For example, within the theme "mothers' inability to respond to their infants when working," some mothers mentioned that they heard their infants cry, but that they continued to work anyway. Older siblings who may be too young to help the mother or father in the field are often told to take care of their younger infant sibling, and parents sometimes use physical punishment when children do not obey the commands of their parents. Obedience, deference to authority, and compliance to parents' demands are parts of the foundational schema of Gamo culture and are strongly intertwined in the age and gender hierarchies of Gamo culture. Similar foundational schema are common among other agricultural societies in Sub-Saharan Africa (Blurton Jones, 2002; Fouts et al., 2005; Fouts & Lamb, 2009; Keller & Otto, 2009; LeVine et al., 1996; Yovsi & Keller, 2003).

Foundational schema such as age and gender hierarchies and the importance of material trade in interpersonal relations con-

tribute to mothers' views on infant emotions as signals for physical needs with little focus on infants' emotional needs (LeVine, 1977). Gamo mothers never discussed the need for verbal affection as is often seen in studies of Western societies (i.e., expressing love) or physical affection in response to their infants' emotional displays, and like other parents from agricultural societies, Gamo mothers engage in less face-to-face interaction, smiling with their infant, and in eye contact (Keller et al., 2005; LeVine, 1977). Although holding was a frequent practice used by Gamo mothers to calm distressed infants, holding was not described as an emotional act but rather simply as a way to stop infant fussing and crying. Kilbride and Kilbride (1983) described this as "low positive affect" in the mother-infant relationship, which is consistent among many agricultural societies; however, variations in this pattern of behavior among agriculturalists have been found (Kilbride & Kilbride, 1983; LeVine, 1970; Super & Harkness, 1974).

Gamo mothers did discuss the importance of material objects for infant happiness. This is not surprising considering that Gamo own materials, and conflict often arises over stealing. Fouts and Lamb (2009) found that conflict regarding objects was more frequent among Bofi farmer toddlers (Central Africa) as compared to Bofi forager toddlers, and they suggested that sharing was less common among Bofi farmers and that material resources were perceived as limited in farming foundational schema. Furthermore, Hewlett et al. (2000b) found that Ngandu farmers (Central African Republic) had a fearful perception of the environment and a limited view of environmental resources, which led to a defense of resources and, thus, less sharing. Gamo mothers often mentioned that they were unable to buy objects for their infants to play with, but that if their infants had these objects, they would be much happier. Material objects represent wealth among the Gamo; thus, happiness may be tied to having these objects, and mothers recognize this even among their young children.

Mothers also seemed to mirror their infants' happiness or sadness. Emotional contagion, the unconscious tendency to mimic facial expressions, body movements, and vocalizations of another person, is a universal and well-known phenomenon (Hatfield, Carpenter, & Rapson, 2014; Malatesta & Izard, 1984; Preston & de Waal, 2002) believed to promote mother-infant bonding (for a review, see Preston & de Waal, 2002; Trevarthen, 1979). Furthermore, both mother and infant are affected by each other's emotional state, and the mother's emotional affect in response to infant emotion may be particularly adaptive by inducing maternal response and stimulation (for a review, see Preston & de Waal, 2002). Gamo mothers were often observed holding their infants in a wrap on their backs. This practice was regularly initiated following infant distress, but mothers continued to hold and carry infants in this way even after the infant had calmed.

Emotional contagion of chronic distress also can lead to a depressed feeling in some people or the tendency to ignore affective displays of distress (Zahn-Waxler, 2002). Thus, a crying infant can sometimes induce empathic concern or avoidance in parents and, in some cases, abuse (Zahn-Waxler, 2002). Similar to findings on emotional contagion research, Gamo mothers expressed an array

of emotions in response to their infants' emotions such as stress, anger, happiness, sadness, and sometimes avoidance or a lack of acknowledgment of their infants' emotions. Gamo mothers expressed that the stress caused by their infants' crying caused them to become angry. Some mothers mentioned that they would ignore their infants' cries, but this appeared to be related to mothers' work demands. However, what may cause mothers to avoid their infants' emotions, express stress in response, or feel anger, sadness, or happiness is unknown. Mothers may be inclined to avoid responding to their infants if they know that a sibling is nearby to respond to the infant's needs. Gamo mothers can continue to work if they are not the only individual around who is capable of attending to the infant's needs, as siblings are effective at calming a fussy infant.

According to Reddy (1991), symbolic knowledge is created through interpersonal interaction; thus, emotional contagion also may be part of the interpersonal context that helps socialize infants to appropriate emotion expression. According to Holodynski (2009), mirroring of infant emotion by caregivers leads to infants' expectations of future expression, feelings, and caregivers' action-regulating responses. Gamo mothers' anger and stress toward infants' negative emotion may signal to infants that these emotional displays are inappropriate. In accordance with Keller et al. (2004), mothers may be imparting that emotional displays of this type reflect a lack of interdependence and communality.

Parents' perceptions of their infants' needs are influenced by cultural beliefs about infant behavior. For example, Haitian parents living in Montreal perceive infancy as a very vulnerable time period in a child's life, and this leads to co-sleeping, quick responsiveness, and constant carrying (Pomerleau, Malacuit, & Sabatier, 1991). Japanese parents view infants as separate beings that need to be drawn into codependent relationships with others (Wolf, Lozoff, Latz, & Paludetto, 1996), and this leads to highly responsive and constant physical proximity between mothers and babies (Bornstein, Tal, & Tamis-LeMonda, 1991; Shwalb, Shwalb, & Shofi, 1996). Gamo mothers appeared to view their infants as vulnerable and suggested that their infants' sadness may be due to sickness or a physical issue. Beliefs about vulnerable infants most likely stem from the harshness of the Gamo environment (i.e., physical setting construct of the developmental niche). Many mothers commented on the lack of food for their infants, especially infants over 6 months who require food in addition to breastfeeding as well as warm clothes in the cold highlands climate.

### **Limitations**

This study had several limitations. The first author, with the help of the translator, explained the purpose of her presence and the study to participants, but it is possible that participants thought the first author was in the village to provide assistance. This perception could have influenced mothers' answers to the interview questions. For example, mothers did often address difficulty in obtaining complementary food for their infants, but we do not know whether mothers thought that this response was intended for assistance.

Many mothers ascribed to the identified cultural models of infant emotion and needs; however, including more lower class mothers may have resulted in more variation in mothers' beliefs and responses to their infants' emotions. Another limitation of the study included the time of the year that data were collected. Both fieldwork trips occurred during the rainy season, so mothers' responses regarding infant development in the village may have varied had data been collected during the dry season because of changes in weather and mothers' workload at this time. We would expect cultural models of Gamo infant emotion to be similar, however, but mothers' emphasis on what infants need, such as particular foods, may have been different because the dry season is the time of harvesting, and parents discussed having more food during this time. Furthermore, time constraints affected the first author's ability to interview fathers about their infants' emotions and how they felt in response to those emotions. During the rainy season (the time when interviews were collected), fathers spend the majority of the day away from home plowing their fields. It was very difficult to schedule fathers for interviews, and we had hoped to include fathers in this study; however, demographic information was collected from infants' fathers. When fathers were observed at home with their children, they were often nurturing and responsive to their infants' needs, suggesting that fathers are important in Gamo infant care. Fathers also may have different feelings toward their infants' emotions because fathers are not responsible for breastfeeding, which was a predominant theme among Gamo mothers around conflicts with work and infant care and contributed to mothers' feelings of stress in response to their infant's distress.

### **Conclusion**

We have characterized the cultural model of infant emotion and needs, and have demonstrated that Gamo mothers' perceptions of their infants' emotions are inextricably linked to their needs. This cultural model seems to be adaptive in a harsh and unpredictable environment characterized by food insecurity and high infant mortality because Gamo mothers believe that infants' emotional displays are a signal for need (e.g., holding, breastfeeding, complementary foods, etc.). The emotional contagion of infants' emotions could be an internal indicator upon which mothers rely to assess their infants' health. Gamo mothers' parenting strategy is to help their infants survive, and mothers rely on sibling caretakers to help fulfill this goal. Furthermore, it is not surprising that mothers expressed that they were stressed at the sound of their infants' distress if fussing and crying is considered a sign of illness. Whether physical illness is caused by evil eye or some other mode of infection, infant illness threatens mothers' parenting goal of infant survival.

The identification of the Gamo cultural model of infant emotions and needs helps provide an understanding of infant care practices among the Gamo and situates these practices within cultural context. Gamo infant care practices are focused on helping infants survive into childhood, and infant emotions are signals for mothers

to respond with the practices that mothers believe keep their infants alive. This qualitative study demonstrates that infant care practices can be understood more deeply through cultural models. In our study, the Gamo cultural model of infant emotion was linked to infant care; however, this could be different in other cultures and environments. Investigations of cultural models of infant emotion and needs in other contexts would help to provide understanding about the extent to which aspects of the Gamo model relate to universal notions of infant emotions and what notions are unique to Gamo culture and environmental context.

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