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Mayilin Moreno-Torres * and Paola Molina

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Article

Early Empathic Responses and Prosociality in a Simulated Distress Context: Evidence from Colombian Children

Mayilin Moreno-Torres [1,*] and Paola Molina [2]

[1] Universidad del Norte

[2] Università degli Studi di Torino

* Correspondence: mamoreno@uninorte.edu.co

Abstract

Background/Objectives: Prosocial behaviors such as helping, sharing, and comforting constitute a core aspect of human sociality and emerge early in development. Understanding how early empathic responses are organized is central to current debates on the developmental foundations of prosociality, particularly beyond Western, educated, industrialized, rich, and democratic (WEIRD) populations. This study examined the developmental organization of early empathic responses and the contributions of age, sex, and socioeconomic context to variability in early prosocial behavior. **Methods:** Thirty-six Colombian children aged 14 to 30 months from three socioeconomic contexts (very low, low, and middle–high), including children from indigenous Wayuu communities, were observed during a simulated distress situation derived from the *Échelle de Communication Sociale Précoce* (ECSP). Empathic responses were coded using the expanded hierarchical classification proposed by Molina and Bulgarelli and summarized through an ordinal empathy score reflecting the highest level of empathic organization observed. Quantitative analyses were complemented by qualitative observations of interactional behavior. **Results:** Empathic response organization increased with age and was positively associated with overall socio-communicative development. No significant differences were observed according to sex or socioeconomic context. Qualitative analyses revealed a progressive organization of empathic responses, ranging from attention and discomfort to coordinated gestural and symbolic prosocial behaviors, consistent across sociocultural settings. **Conclusions:** Early empathy appears as an interactionally organized and developmentally robust foundation of prosocial behavior during the first three years of life. These findings contribute to ongoing discussions on the early bases of human prosociality and its expression across diverse sociocultural contexts.

Keywords: early empathy; prosocial behavior; early childhood; socio-communicative development; simulated distress; developmental organization; non-WEIRD populations; Colombia

1. Introduction

Prosociality refers to behaviors intentionally oriented toward benefiting others, even when they involve a personal cost, such as helping, sharing, and comforting [1]. These behaviors play a central role in social cohesion and cooperation and have therefore been studied across disciplines including philosophy, psychology, ethology, and neuroscience. From a developmental perspective, early prosocial behaviors are particularly important because they emerge before explicit moral reasoning and the internalization of social norms, raising fundamental questions about the origins of human sociality [2–4].

A growing body of research indicates that infants and toddlers show sensitivity to others' distress within the first years of life and engage in early forms of comforting and helping [3–6]. These findings suggest that prosociality is grounded in early-developing socio-emotional processes rather

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than being solely the result of later moral learning. Within this literature, early empathy has been identified as a key foundation of prosocial behavior. However, empathy is not a unitary construct: it involves affective, attentional, and behavioral components that become progressively organized across development [7,8]. In early childhood, empathic experience cannot be assessed through self-report and must be inferred from observable behavioral responses to others' distress, such as gaze orientation, bodily tension, vocalizations, or attempts to comfort [5,9]. As a result, the distinction between empathic sensitivity and prosocial behavior is particularly blurred during the first years of life.

An influential methodological framework for studying early socio-communicative development is the *Échelle de Communication Sociale Précoce* (ECSP), developed by Guidetti and Tourrette [10]. The ECSP is an observational developmental scale designed to assess the hierarchical organization of social and communicative competencies in young children through structured play situations. Rather than functioning as a normative psychometric instrument, the ECSP provides a developmentally sensitive framework for examining how socio-communicative behaviors are organized in interaction. The scale has been applied in diverse cultural contexts, including Italian and Swiss samples [11], and has also been used to examine early socio-communicative development in Colombian populations [12].

Within the ECSP, the situation in which an adult pretends to cry has been widely used to observe children's responses to others' distress. Importantly, this situation does not constitute an experimental task in the strict sense, but rather a structured play situation, in which the adult introduces a scene of simulated distress without assigning an explicit cause or making direct demands on the child [10,13]. This playful and relational framing allows researchers to observe how children interpret and respond to others' distress in an open interactional context, rather than assessing obedience, moral repair, or transgressive behavior. In the original ECSP, this situation includes a single conventional gestural prosocial response, interpreted as a form of parallel sharing empathy [14].

Molina and Bulgarelli [13] argued that reducing early empathic responses to a single conventional behavior fails to capture their developmental diversity. From a developmental perspective, they proposed an expanded hierarchical coding system that distinguishes a range of responses to simulated distress, from indifferent or non-codable reactions to increasingly organized gestural, verbal, and symbolic prosocial behaviors. In this framework, early empathy is conceptualized not as an internal mental state, but as an observable socio-communicative process that reflects the organization of children's behavior in interaction. Their findings showed that the complexity of empathic responses increases with age and is closely related to overall socio-communicative development, while no systematic differences were observed according to child sex.

Subsequent studies have reinforced this developmental view, suggesting that empathic sensitivity emerges early as a shared foundation of human development and becomes progressively reorganized as emotional regulation, joint attention, and language skills develop [1,7,8].

Despite these advances, much of the empirical evidence on early empathy and prosociality has been derived from Western, educated, industrialized, rich, and democratic (WEIRD) populations [15]. This has raised concerns about the generalizability of prevailing developmental models. Importantly, recent critiques emphasize that the WEIRD problem extends beyond sample selection to include theoretical assumptions, experimental designs, and culturally normative tasks that may shape participants' responses [16]. From this perspective, finding similar results in non-WEIRD contexts does not necessarily imply decontextualized psychological universals, but may reflect the robustness of certain developmental processes or the normative character of the research paradigms employed.

Socially diverse contexts such as Colombia offer a valuable opportunity to address these issues by examining both cross-cultural and intra-cultural variability. In particular, the inclusion of children from indigenous Wayuu communities—characterized by distinct cultural traditions, socialization practices, and linguistic contexts—allows for the consideration of developmental trajectories that are

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rarely represented in the literature. While the present study does not aim to conduct exhaustive cultural comparisons, observing early empathic responses across culturally diverse contexts contributes to ongoing debates about universality and variability in early prosocial development.

Another longstanding debate concerns sex differences in empathy. Although girls are often assumed to be more empathic than boys, evidence based on direct observation in early childhood suggests that such differences are minimal or absent before the age of three and tend to emerge later as a result of differential socialization practices and gender norms [8,17].

Against this background, the present study examines empathic responses to others' distress in Colombian children under three years of age from three socioeconomic contexts (very low (indigenous), low, and middle–high), using the ECSP simulated crying situation and the expanded hierarchical classification proposed by Molina and Bulgarelli [13]. Empathy is operationalized through an ordinal empathy score corresponding to the highest level of empathic response observed in each child, reflecting the maximum degree of empathic organization achieved during interaction. In addition, children's overall socio-communicative level derived from the ECSP is included as an indicator of general socio-communicative development.

The main aim of this study is to examine how empathic responses are organized during the first three years of life and to assess the contributions of age, sex, and socioeconomic context to variability in early prosocial behavior. Consistent with a developmental perspective, we anticipate that empathic response complexity will increase with age, that no significant sex differences will be observed before age three, and that overall levels of empathic sensitivity will be comparable across contexts, supporting the view of early empathy as a robust developmental foundation expressed across diverse sociocultural settings.

2. Materials and Methods

2.1. Participants

The sample consisted of 36 children (19 girls, 17 boys) aged between 14 and 30 months (M = 22.61 months, SD = 4.28), recruited from three socioeconomic contexts in Colombia. Children were equally distributed across contexts (n = 12 per group).

Socioeconomic status (SES) was defined using the official state-based socioeconomic stratification system administered by the National Administrative Department of Statistics (DANE), which classifies residential areas into six strata (1 = lowest, 6 = highest) based primarily on housing and neighborhood characteristics. This system is used nationwide to regulate access to public utilities and to implement a redistributive mechanism, whereby households in lower strata receive subsidies for public services, while households in higher strata contribute proportionally higher payments to support these subsidies [18]. For this reason, the stratification system constitutes a context-specific mechanism unique to Colombia and is widely used as an indicator of socioeconomic context in public policy and developmental research [12,19,20].

Based on this classification, participants were grouped into three socioeconomic contexts. The *very low SES context* corresponded to stratum 1 areas characterized by precarious housing conditions and limited access to resources and services. Although this stratum may include both indigenous and non-indigenous populations in Colombia. In the present study this group was composed exclusively of children from Wayuu indigenous communities, whose cultural and linguistic practices differ from those of non-indigenous urban contexts. *The low SES context* consisted of children living in areas classified within strata 2-3. *The middle–high SES* context consisted of children living in areas classified within strata 4–5.

Inclusion criteria were: (a) age ≤ 36 months, corresponding to the upper age limit of the ECSP, and (b) absence of developmental delays reported by caregivers. All children were assessed in the presence of an adult, typically their primary caregiver. Written informed consent was obtained from all parents or legal guardians.

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2.2. Study Design

A cross-sectional observational design was employed, combining quantitative and qualitative analyses. Empathic responses were examined through direct observation during structured ECSP play situations, with particular emphasis on the simulated crying situation.

2.3. Procedure

Assessments were conducted individually in different settings, including early childhood centers, community spaces, and an observation room within a university psychology laboratory (Gesell-type observation room). All assessments took place in quiet environments without external interruptions and were video-recorded.

The complete ECSP, consisting of 23 structured play situations, was administered to assess early socio-communicative development [10]. One of these situations involved the adult pretending to cry, used to observe children's responses to another's distress.

Following the procedures described in the ECSP and its application to the study of early empathy [10,13], the adult expressed distress through simulated crying, facial expressions, and vocalizations, without providing an explicit cause and without requesting comfort or assistance. The situation was framed as a playful and relational interaction, allowing children to interpret and respond freely.

The duration of the simulated crying episode varied, with an average duration of approximately 35 seconds (M = 34.6 s) and ended either when the child's response was clearly expressed or when the child disengaged from the interaction.

2.4. Measures

2.4.1. Empathic Response

Empathic responses were coded using the expanded hierarchical classification derived from the ECSP framework [10] and proposed by Molina and Bulgarelli [13]. This classification conceptualizes early empathy as an observable socio-communicative process and distinguishes increasing levels of empathic organization during interaction.

Following Molina and Bulgarelli [13], empathic responses to the simulated crying situation were coded using a hierarchical classification reflecting increasing levels of organization:

Non-codable or indifferent responses (Level 0) were characterized by an absence of observable reaction or by rapid disengagement from the situation, suggesting a lack of understanding or interest. This category also included responses in which the child appeared blocked or sought comfort from the accompanying adult without orienting toward the distressed evaluator.

Simple interaction (Level 1) involved participation in the interaction as if it were positive, such as smiling or vocalizing, without clear behavioral indicators of concern for the adult's distress.

Concern or discomfort (Level 2) was defined by observable signs of unease or attention to the adult's distress, including sustained observation, gaze avoidance, bodily tension, or expressions of emotional discomfort, without attempts to intervene.

Conventional gestural empathy (Level 3) corresponded to empathic responses expressed through bodily or gestural actions, such as touching, patting, hugging, or offering an object to the distressed adult, reflecting a form of parallel sharing empathy.

Conventional verbal empathy (Level 3.5) included the use of simple verbal expressions aimed at comforting the adult (e.g., "don't cry"), often combined with gestural actions.

Symbolic empathic responses (Level 4) involved more elaborated, intentional, and symbolic forms of prosocial engagement, such as using complete verbal utterances to comfort or distract the adult, or engaging in playful actions aimed at restoring the interaction.

Each child was assigned an ordinal empathy score corresponding to the highest level of empathic response observed during the simulated crying situation.

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2.4.2. Socio-Communicative Development

Children's overall socio-communicative level was assessed using the ECSP [10] as an index of general communicative organization.

2.5. Qualitative Analysis and Reliability

Qualitative analysis followed a theory-driven, categorical approach based on the hierarchical classification of empathic responses proposed by Molina and Bulgarelli [13]. Two trained evaluators independently coded empathic responses for all 36 video-recorded sessions, assigning empathic response levels and recording systematic observational notes during the coding process.

These contemporaneous annotations captured general behavioral features of the interaction, including children's bodily orientation, gaze behavior, regulatory actions, proximity seeking, and engagement with the evaluator. The qualitative analysis was based on these observational notes examined in relation to the empathic coding framework, with the aim of identifying patterns in the organization of empathic responses across developmental levels rather than quantifying behavioral frequencies.

To ensure coding consistency, all cases were subsequently reviewed by a third evaluator, who examined the assigned levels and observational annotations. Discrepancies were resolved through consensus, ensuring coherence between quantitative empathy scores and qualitative descriptions of empathic behavior.

2.6. Data Analysis

Descriptive statistics and non-parametric analyses were conducted. Associations between age and empathic response level were examined using Spearman correlations. Differences by sex and socioeconomic context were assessed using the Mann–Whitney and Kruskal–Wallis exact tests, respectively ($p < .05$).

2.7. Materials and Data Availability

Observational protocols and coding criteria are based on the ECSP and its application to early empathy [10,13]. The coding grid is available from the corresponding author upon reasonable request. Due to the sensitive nature of video data involving young children and indigenous communities, raw data are not publicly available. Anonymized coding data may be shared subject to ethical approval.

2.8. Ethical Approval

The study was conducted in accordance with the Declaration of Helsinki and Colombian regulations for research with human participants. Ethical approval was initially granted by the Research Ethics Committee of Universidad del Norte in 2019 (Act No. 185) and subsequently renewed and expanded in 2022 (Act No. 273) as part of the same research program. Written informed consent was obtained from all caregivers.

2.9. Use of Generative Artificial Intelligence

During the preparation of this manuscript, the authors used ChatGPT (OpenAI) to support language refinement and translation into English, as the authors' primary languages are Spanish and Italian, as well as structural organization of the text. The authors reviewed and edited the output and take full responsibility for the content of this publication.

2.10. Replicability and Transparency

Procedures are reported with sufficient detail to allow replication and extension in comparable sociocultural contexts.

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3. Results

3.1. Descriptive Statistics of Empathic Responses

Descriptive analyses indicated comparable levels of empathic responses across sexes. Boys (n = 17) showed a mean empathy score of M = 1.71 (SD = 1.10), while girls (n = 19) showed a mean score of M = 1.63 (SD = 1.07). The overall mean empathy score for the total sample was M = 1.67 (SD = 1.07) (Table 1).

Table 1. Descriptive statistics of empathy scores by sex*.

Sex	*n*	Mean empathy score	*SD*
Boys	17	1.71	1.10
Girls	19	1.63	1.07
Total	36	1.67	1.07

*Empathy scores correspond to the highest level of empathic response observed during the simulated crying situation of the ECSP, coded according to the hierarchical classification proposed by Molina and Bulgarelli [11].

3.2. Developmental Associations

Empathy scores were positively correlated with age (r = .42), indicating an increase in the organization of empathic responses across the first three years of life. A similar positive association was observed between empathy scores and the ECSP Mean Level (r = .43), suggesting that higher levels of empathic response were associated with more advanced socio-communicative development.

3.3. Differences by Socioeconomic Context

No significant differences were observed among socioeconomic groups with respect to age or overall socio-communicative level. Empathy scores did not differ significantly across the three socioeconomic contexts, H (2) = 1.227, p = .556 (Kruskal–Wallis exact test, Monte Carlo method).

3.4. Gender Differences in Empathic Responses

No significant gender differences were observed in empathy scores in the total sample, U = 158.000, p = .921 (Mann–Whitney exact test, Monte Carlo method). Similarly, no significant gender differences were found within any of the socioeconomic groups (Table 2).

Table 2. Empathy scores by sex across socioeconomic contexts*.

SES	Mean empathy score *(SD)*				*U*	*p*
	Boys		Girls			
	n.		n			
Very Low (Wayuu)	7	1.14 (1.07)	5	1.80 (.84)	12.000	.397
Low	5	2.00 (.00)	7	1.57 (1.13)	15.000	.789
Middle-High	5	2.20 (1.48)	7	1.57 (1.27)	13.000	.519

*Empathy scores correspond to the highest level of empathic response observed during the simulated crying situation of the ECSP, coded according to the hierarchical classification proposed by Molina and Bulgarelli [11].

3.5. Qualitative Organization of Empathic Responses

Qualitative analyses were conducted based on the hierarchical classification of empathic responses proposed by Molina and Bulgarelli [13], applied to the simulated crying situation of the ECSP. This analysis allowed for a fine-grained examination of how empathic responses were organized in interaction, complementing the quantitative empathy scores.

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Across the sample, a wide range of empathic response levels was observed, from non-codable or indifferent reactions to more organized gestural and symbolic behaviors. In younger children, and particularly in those displaying lower empathy scores, responses were frequently characterized by avoidance of gaze, brief looks toward the evaluator followed by disengagement, or self-directed regulatory behaviors such as scratching, touching the face, or seeking proximity to the accompanying adult. In several cases, children appeared visibly uncomfortable or confused, showing concern without initiating any form of intervention.

As empathic organization increased, children more often displayed behaviors corresponding to concern and parallel sharing, including sustained observation of the evaluator, bodily orientation toward the distressed adult, and physical proximity. Gestural empathic responses were common, such as touching the evaluator's arm or leg, offering an object, or allowing physical contact (e.g., being hugged). These behaviors were often accompanied by facial expressions indicating concern or tension, even in the absence of explicit helping actions.

At higher levels of empathic organization, children engaged in more active and intentional prosocial behaviors, including offering toys repeatedly, attempting to distract the evaluator, or combining gestures with simple verbalizations (e.g., affirmative responses to invitations to play). In a smaller number of cases, children produced symbolic or playful actions aimed at restoring the interaction, such as joking, teasing, or intentionally repeating an action while monitoring the evaluator's emotional reaction.

Importantly, these qualitative patterns were observed across sexes and socioeconomic contexts, including children from very low socioeconomic backgrounds and indigenous Wayuu communities. No systematic qualitative differences were identified between boys and girls in the forms of empathic responses displayed. Instead, variation in empathic behavior was primarily associated with developmental level, reflected in the increasing coordination of attention, emotion, gesture, and, in some cases, language.

Overall, the qualitative findings support the view that early empathic responses are best understood as developmentally organized socio-communicative processes, rather than as fixed traits or gender-differentiated dispositions. These observations are consistent with the quantitative results and provide converging evidence for a progressive organization of empathy during the first three years of life.

4. Discussion

The present study examined early empathic responses to simulated distress in Colombian children under three years of age, integrating quantitative and qualitative analyses based on the ECSP framework and the expanded hierarchical classification proposed by Molina and Bulgarelli [13]. The findings provide converging evidence that early empathy is best understood as a developmentally organized socio-communicative process rather than as a fixed trait or a gender-differentiated disposition.

Consistent with our hypotheses and previous developmental research, empathic response complexity increased with age and was positively associated with overall socio-communicative level. This pattern supports models proposing that early empathy emerges as a foundational sensitivity to others' distress and becomes progressively reorganized as children develop emotional regulation, joint attention, and communicative competencies [1,7,8].

No significant sex differences were observed, either in the overall sample or within socioeconomic contexts. This finding is consistent with observational studies suggesting that gender differences in empathy are minimal or absent in early childhood and tend to emerge later, likely as a result of differential socialization practices and gendered expectations [17]. The present study was based on direct and systematic observation rather than on questionnaires or adult perceptions derived from parent or teacher reports. In this respect, it contributes, on the one hand, to reducing the influence of gender stereotypes and the potential bias that may arise when adults interpret children's behavior according to gender expectations (e.g., "girls are more empathetic"). On the other

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hand, it contributes to ongoing debates regarding the developmental timing of sex differences in empathy.

Another important finding of this study is that levels of empathic response did not differ across socioeconomic contexts, even when these contexts were not only socially but also culturally distinct, as in the case of the Wayuu. These results support the view that early empathy has a shared evolutionary basis and suggest that basic empathic sensitivity is robust across diverse social conditions. At the same time, qualitative analyses revealed variability in the organization of empathic responses during interaction, highlighting that universality does not imply behavioral uniformity. Notably, this study extends findings that have largely been obtained in Western contexts to a non-Western population such as the Wayuu. This distinction is particularly important given ongoing critiques of WEIRD bias in developmental psychology. In this sense, the study contributes to concerns about generalizability that go beyond sample selection to encompass theoretical assumptions and task structures [15,16].

Finally, the findings of this study, which include children from very low socioeconomic contexts—particularly from Wayuu Indigenous communities—suggest that variability between groups may reflect differences in interactional organization rather than the absence of early empathic sensitivity. This interpretation offers an additional perspective on the patterns observed in early empathic development and suggests that early empathic responses may be grounded in broadly shared interactional processes, even when expressed through distinctive sociocultural practices.

This study, however, acknowledges several limitations. First, while the study provides relevant information, the sample size is relatively small, which limits statistical power and the ability to detect subtle effects. Second, the study design was cross-sectional, which does not allow for the direct examination of developmental trajectories or temporal effects in the emergence of empathic organization. In this respect, future research should prioritize longitudinal designs to investigate how early empathic responses evolve over time and how they relate to subsequent prosocial behaviors.

Third, the qualitative analysis did not rely on formal discourse analysis or software-based microanalytic methods, although it did provide valuable information on the organization of empathic responses based on the observational notes recorded during coding. Future research could complement this approach with fine-grained temporal or multimodal methods to examine in greater detail the coordination and timing of empathic behaviors during interaction. Finally, the present study relied on a single interactional paradigm to assess empathic responses. While this limits the range of contexts in which empathy was observed, the simulated crying situation retains key features of everyday social interactions, as it involves spontaneous emotional expression within a playful exchange between an adult and a child, without imposing explicit demands on the child. In this sense, the paradigm captures interactional aspects of empathic responses that are particularly salient in early childhood, while also allowing for experimental control. Future research would benefit from integrating multiple observational contexts of need or distress to examine how different components of empathic organization emerge across situations, especially in socioculturally diverse and underrepresented populations [21].

5. Conclusions

The present findings indicate that early empathic responses are organized progressively during the first three years of life and are closely linked to general socio-communicative development, while remaining largely independent of sex and socioeconomic context. These results support the conceptualization of early empathy as a shared developmental foundation of prosociality, observable in interaction and shaped by developmental organization rather than by early categorical differences. This perspective contributes to a more nuanced understanding of early prosocial development in culturally and socially diverse contexts.

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writing—review and editing, M.M.-T. and P.M.; supervision, P.M.; project administration, M.M.-T. All authors have read and agreed to the published version of the manuscript

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Research Ethics Committee of Universidad del Norte (protocol code 185, initial approval 2019).

Informed Consent Statement: Informed consent was obtained from the parents or legal guardians of all children involved in the study.

Data Availability Statement: The data supporting the findings of this study are not publicly available due to ethical restrictions related to the protection of minors and the involvement of indigenous communities. Anonymized coding data may be made available by the corresponding author upon reasonable request and subject to ethical approval.

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Conflicts of Interest: The authors declare no conflicts of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

Abbreviations

The following abbreviations are used in this manuscript:
ECSP Échelle de Communication Sociale Précoce
SES Socioeconomic Status

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