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Synchronization and initiative in mother-baby interaction at two and four months of age

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This study investigates mother-infant interaction during the first months of life, focusing on how typical babies engage socially at two and four months of age. Using a longitudinal design, we analyzed video recordings of 25 mother-baby pairs during three interaction contexts: free play, standardized toy, and song. The results showed that babies actively communicate through gaze, vocalizations, and multimodal initiatives, with developmental increases between two and four months, particularly in gaze during singing and initiative during free play and toy interaction. The results highlight that synchrony and interaction are affected by the interaction context, with free interactions contributing to greater dyadic synchrony and participatory freedom. This research provides more informations to understanding early communicative behaviors and the dynamic nature of mother-infant social exchanges.

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ABSTRACT

Introduction: Mother-baby interaction in the first months of life is mutually regulated. Babies communicate with their caregivers actively and multi-modally from gestation onwards. We aim to describe and compare the social engagement of typical babies at two and four months of age, with emphasis on communicative initiative and degree of synchrony in mother-infant interaction. **Methods:** A quantitative and analytical longitudinal study was conducted based on the analysis of video footage of the interaction between 25 mother-infant dyads at two and four months of age, at three different recording times: free, with a standardized toy and based on a song. The Coding Interactive Behavior (CIB) instrument was used to analyze the videos. **Results:** At both ages, babies were able to direct their gaze, vocalize, and initiate interaction in a multimodal manner. Statistically significant differences were found between the two ages for the variables gaze (during the song) and initiative (in the free and toy conditions) ($p < 0.05$), showing increased values at four months compared to two months. **Discussion:** Mother-baby interaction is influenced by the interaction moment and the stages of child development, with synchrony evolving over time. Better outcomes in baby and maternal behaviors, as well as in dyadic synchrony, were observed during the free interaction moment. This may be associated with the predominance of face-to-face exchanges at this age and with the greater participatory freedom experienced by both mother and baby in this situation.

Key-words: baby; communication; mother-child relations; language development; child development.

INTRODUCTION

Early communication between mother and babies is considered the foundation of many essential socio-cognitive developmental acquisitions (1–3). Through naturalistic observation of babies interacting with adults, it has been observed that, from the earliest moments of life, infants are active partners: they listen attentively, show interest in others through facial expressions, and both solicit and respond with vocalizations, in a coordinated process of emotional attunement (4–6).

Thus, the baby is immersed in language from the prenatal period and communicates with their caregiver in a multimodal manner (7), driven by intrinsic motivation and a transformative attitude during interaction (8). The interactive nature of neonatal imitation has been explored through behavioral and psychophysiological methods, revealing that newborns possess the capacity for initiative—a behavior described as "provocation" (9,10). In these studies, it was observed that neonates spontaneously and intentionally repeated gestures previously modeled by an examiner, while actively awaiting a response. These findings suggest that newborns are not only capable of imitating gestures, but also of eliciting imitative responses from others, thereby sustaining an intentional and reciprocal interaction. Neonatal imitation is thus recognized as one of the complex social skills that reflect innate intersubjectivity (9).

In 2019, a new study replicated the neonatal imitation paradigm using refined methodologies in a sample of 42 newborns (0 to 3 days old). The researchers tested the imitation of tongue protrusion, head tilting while looking upward, and gestures using three and two fingers. Results demonstrated that newborns were capable of imitating all three gesture types (11).

According to Trevarthen (8), human beings understand one another intimately and on multiple levels, based on the premise that interpersonal communication is guided by feedback mechanisms, like all voluntary behavior. Unlike interaction with the physical world, in which control is external, in interpersonal communication two people can share control and predict each other's knowledge and

actions—thus, the infant engages with the other through their own subjectivity (8).

Beyond initiative and intentionality in communication, the literature highlights the infant's ability to engage in communicative exchanges with respect to turn-taking—a cross-cultural skill involving two basic premises: partners avoid overlapping speech and silence between turns (12,13). The interlocutor interacts rhythmically and synchronously with the other, with co-occurrence of behaviors, emotions, and biological rhythms (14). Babies and their mothers mutually regulate attention and emotion through complex rhythmic pathways, exchanging multimodal signals and imitating vocal, facial, and gestural expressions (15).

The concept of synchrony was defined by Feldman (16, p. 43–44) as "temporal coordination between processes that occur simultaneously or sequentially and do not involve any heuristic symbolic system (e.g., cognition or affect)." Over time and through daily experience, parents and children adjust to each other's cues, and this biobehavioral synchrony provides the foundation for father-baby bonding, as well as being essential for the maturation of the child's social brain (14,15).

Contingent interaction requires a reciprocal ability in both partners to perceive and respond to each other's messages, and it is essential for infant engagement from the newborn stage (17). When absent, this can compromise communicative exchanges and, consequently, the child's psychological and language development (18).

In view of the above, the main objective of the present study is to describe and compare the social engagement of typically developing infants at two and four months of age, with an emphasis on communicative initiative and the degree of synchrony observed in interactions between partners. This was carried out using a specific instrument designed for the quantitative and qualitative assessment of dyadic behavior, the Coding Interactive Behavior (CIB) system (19), developed by the Department of Psychology and the Gonda Brain Sciences Center in Israel, in its version for infants aged 2 to 36 months.

Regarding baby behavior, the aim is to observe and quantify gaze maintenance and the frequency of vocalizations directed at the mother, and to compare these variables at two and four months of age. With respect to the mother, the study intends to measure maternal recognition and substitution in interaction with the infant and compare these aspects at both time points. Finally, this study seeks to compare the variables across three distinct communicative contexts: free interaction, interaction with a toy, and interaction through a song, in order to test hypotheses about how each context may differentially affect dyadic synchrony

MATERIALS AND METHODS

The design of this study is longitudinal, quantitative, observational, and analytical in nature. It was approved by the Research Ethics Committee in Health Sciences at the Universidade Federal de Minas Gerais (blinded information). The systematic sample consisted of 25 mother-baby dyads with typical development, whose mothers received prenatal care at the Jenny de Andrade Faria Institute, a unit attached to the Hospital das Clínicas of the Universidade Federal de Minas Gerais (UFMG). The dyads were observed at two time points: at two and four months of chronological age.

To be eligible for inclusion, babies had to be two months old, have had no complications during the gestational or perinatal period, and the mother had to provide informed consent by signing the Free and Informed Consent Form. Exclusion criteria included neuropsychomotor developmental delays identified using screening tools applied during each visit: the Denver II Developmental Screening Test (20) and the Gordo et al. Protocol (21). Additionally, withdrawal from the study by the family was considered an exclusion criterion.

The study was conducted at the BabyLab, a research laboratory at the UFMG School of Medicine (Figures 1 and 2).

The research followed the workflow described below:

1. Recruitment: Families were personally invited to participate in the study before the baby's birth, while the mothers were attending prenatal consultations at the Jenny de Andrade Faria Institute, part of the HC/UFMG hospital complex.
2. Scheduling: Interested families were contacted and scheduled for visits to the BabyLab.
3. Evaluation: In the lab setting, babies' development was initially assessed using two instruments: the Denver II Developmental Screening Test (20) and the Gordo et al. Protocol (21).
4. Video recording: Babies who scored within the expected range were recorded during mother-baby interaction. Those who presented any concerns during evaluation were excluded from the study but referred for further assessment.

The Denver II (20) consists of 125 items covering personal-social, fine motor-adaptive, language, and gross motor skills from birth to six years. A child is considered to have typical development when they perform the expected activity for their age; caution is noted when a child fails or refuses to perform an activity already completed by 75–90% of their peers; and delay is indicated when the activity is not performed by over 90% of peers.

The Gordo et al. Protocol (21) evaluates developmental milestones between two and 12 months in areas such as expressive and receptive communication, visual skills, feeding, and social interaction, based on caregiver responses and direct observation.

Regarding video recordings, the mother-baby interaction was filmed in three different contexts: free interaction, interaction with a standardized toy, and interaction through a song. Mothers were asked to interact spontaneously with their babies: first with no objects, then with a rubber dog toy, and finally by singing the popular song "Happy Birthday." Each moment was recorded for three minutes, totaling nine minutes per dyad.

In all interaction contexts and at both age points (two and four months), babies were seated in an infant car seat in a semi-reclined position with back support. Mothers sat in front of the baby on a cushion placed on a mat. Guidance was given to ensure appropriate positioning for optimal video capture of both participants and their reflections in a mirror behind them (Figures 1 and 2).

The videos were analyzed using the Coding Interactive Behavior (CIB) system (19), developed by the Department of Psychology and the Gonda Brain Sciences Center in Israel, in its version for babies aged 2 to 36 months. The CIB is a global rating scale of parent-child interaction that includes micro-level codes and global rating scales. It consists of 43 items—22 related to the adult, 16 to the baby, and five dyadic scales. The analysis focuses on the style of each partner, the overall quality of the relationship, and the interactive involvement of the dyad. Coding is performed after observing the entire session and rating the frequency of each item on a scale from 1 to 5, with higher scores indicating greater presence during the interaction.

Of the 43 items, 31 apply to babies aged two and four months. For this study, eight codes were selected for analysis: initiative, vocalization, gaze, recognition, substitution, reciprocity, regulation, and fluency. Three items referred to the baby—communicative initiative, vocalization, and gaze—based on their central role in social engagement and language development. Two items concerned the mother—recognition and substitution—reflecting maternal sensitivity. Finally, three dyadic items—reciprocity, regulation, and fluency—were considered to assess the overall quality of interaction.

According to the instrument manual (19), the selected items describe the following behaviors:

- Initiative: The baby initiates mutual activity, verbally or nonverbally, seeking to direct the interaction and gain the parent's attention.
- Vocalization: The baby frequently emits positive sounds in a proprioceptive way, directed at the partner or an object. Crying and murmuring are not considered.
- Gaze: The baby maintains eye contact with the parent or during joint play.
- Recognition: Parents demonstrate awareness of the baby's social cues and respond to their interests and needs. Example: during play, if the baby looks at another object, the parent follows the baby's gaze and guesses their interest—"Are you looking at the flowers?" Or, if the baby shows signs of fatigue or loss of interest, the parent adjusts the activity.
- Substitution: Parents interrupt or redirect the baby's continuous behavior to activities led by them—through verbal and gestural cues, gaze, or manipulation. Example: if the baby is engaged in a game, the parent introduces a new toy to shift attention, or if the baby shows signs of fatigue, the parent maintains the stimulation pace.
- Dyadic reciprocity: Parent and baby engage in a back-and-forth interaction where each contributes to the exchange. There is a sense of synchrony, similar to a "dance," with shared participation.
- Dyadic regulation: The dyad adjusts the level of stimulation or involvement according to each other's cues. Example: the parent lowers their voice when the baby averts their gaze, or the baby increases engagement in response to the parent's encouragement.
- Dyadic fluency: Refers to the flow and rhythm of interaction—whether it occurs continuously or with significant disruptions in activity and involvement. A fluent interaction feels smooth, whether fast or slow, energetic or gentle, and is familiar and pleasant for both.

The CIB was coded by one of the authors, who received official training and certification from Feldman's team. Coding followed the instrument's rating system (1 to 5), where 1 indicates minimal or no presence of the behavior, 3 indicates a moderate level, and 5 indicates a strong presence. Scores of 2 and 4 reflect tendencies toward a lower or higher level, respectively.

The coding results were entered into two spreadsheets created in Microsoft Excel, one for each age group analyzed. Based on these data, the paired Student's t-test was applied to calculate the median values of each variable at both time points and to compare differences between the two ages for the study variables. Statistical significance was defined as $p \leq 0.05$. All statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS), version 13.0.

RESULTS

Among the 25 mother-baby dyads who participated in this study, nine were composed of male babies and sixteen of female babies. The results for the baby's initiative, vocalization and baby's gaze; maternal recognition and substitution; and dyadic reciprocity, regulation, and dyadic fluency are presented in Tables 1, 2, and 3.

(Insert Table 1)

Table 1 shows the mean and standard deviation values at two and four months of age for the variables related to gaze, vocalization, and initiative across the three observed interaction contexts (free, toy, and song), as well as the p-values comparing the two age groups. Statistically significant differences were found for the variables gaze during the song ($p = 0.0$) and initiative in the free and toy conditions ($p = 0.03$ and 0.01 respectively). Occurring, in these cases, as a significant increase in the mean at four months compared to two months, suggesting greater baby proactivity in interactions with increasing age, especially in spontaneous and object-mediated contexts.

Concerning gaze, the mean scores were consistently higher than those for initiative and vocalization at both ages. Although vocalization did not show statistically significant differences, a slight increase in mean values over time was observed

(Insert Table 2)

Table 2 presents the mean values, standard deviations, and p-values comparing the two- and four-month periods for the maternal variables: recognition and substitution, across the three recorded moments (free interaction, object, and song). No significant differences were found between the two time points for the variables analyzed.

The results indicate stability in the variables across the evaluated moments: recognition means remained close to 3 in all conditions, while substitution showed the lowest overall mean values (~1.1–1.5).

(Insert Table 3)

Table 3 presents the mean values, standard deviations, and p-values comparing the two- and four-month periods for the dyadic variables: reciprocity, regulation, and fluency across the three recorded moments (free interaction, object, and song). No significant differences were found between the variables at two and four months of age. The means ranged from approximately 2.7 to 3.3, suggesting a relatively well-established pattern of exchange at two months that was maintained at four months. Notably, the variable fluency remained virtually unchanged across all moments and both age points

In summary, according to the CIB coding system (Feldman et al., 1998), babies at two months showed average scores for gaze (3/5 on the CIB scale) and minimal scores for vocalization and initiative (1–2/5). At four months, babies reached higher gaze scores (3–4/5) and moderate scores for initiative (2–3/5), while vocalization remained similar between the two groups. For maternal variables, both groups showed average recognition (3/5) and minimal substitution (1/5). All dyadic variables showed moderate frequency of occurrence at both ages (3/5).

Therefore, statistically significant differences between two and four months were found only for the variables gaze (during the song) and initiative (in the free and toy contexts). The remaining variables—vocalization, recognition, substitution, reciprocity, regulation, and fluency—remained stable between the two time points, with means close to or above 2.5 and no statistically significant differences.

DISCUSSION

The findings of this study allow for reflections on social engagement and the quality of mother-baby interaction, particularly with regard to gaze direction. The literature indicates that, by two months of age, babies are already capable of engaging visually and interacting in an attentive and expressive manner (8). In line with this evidence, a moderate frequency of infant gaze directed toward the mother (approximately 3/5 CIB) was observed at both ages assessed. However, this behavior was more prominent at four months, with a statistically significant difference observed during the singing interaction.

Therefore, considering gaze as a mutually regulated behavior, it is suggested that the mother influences the baby's gaze. Although no statistical differences were found in maternal variables between the two ages, recognition scores were higher at four months compared to two months, especially during the song when gaze differed significantly between ages. Researchers have shown that in natural interactions between mothers and their four-month-old babies, the more the dyad engaged in spontaneous and enjoyable singing, the more synchronized their gazes and smiles became during interaction (22).

Beyond the hypothesis that maternal recognition may have influenced the frequency of baby gaze during the song, it is worth considering the baby's musical interest. Trevarthen (8) notes that between four and eight months, babies take greater pleasure in sharing musical experiences. It is now understood that musical interactions between caregivers and children are not solely driven by caregivers; babies participate actively by producing rhythmic movements, gaze, and vocalizations, which can in turn influence how caregivers musically interact with them (23).

Thus, the observed difference in gaze direction between two and four months may relate to neuropsychomotor and musical development, as well as caregiver sensitivity, since the highest gaze means at both ages were found during free interaction, when maternal recognition was also highest.

Regarding vocalization, the literature highlights the pronounced development of proto-conversation in the first three months of life (24). Parental speech often has musical qualities adapted to infant behavior (2), and babies respond with subtly timed vocalizations (25). Dominguez et al. (5) report that babies produce vocalizations that rapidly acquire resonance and intonation shaped to communicate with their interlocutor. Between two and five months, vocal production resembles dialogue, with no difference in frequency between age groups, suggesting that although mothers adapt turn-taking, the baby is an active participant even at a very early age (13).

The frequency of vocalizations was similar at two and four months of age (around 2/5 on the CIB). However, during object interaction, four-month-old infants showed a lower average compared to two-month-old infants, possibly due to increased interest in objects (8). In another study on the sound production of infants between 120 and 150 days of age, no statistically significant differences were found between the younger and older age groups (26). At both ages, the average number of vocalizations was higher during free interaction.

Regarding communicative initiative, our results concur with Nagy's findings on neonatal "provocation" (9,10), describing interactive neonatal behavior. Despite low scores for this variable at both ages (<3/5 CIB) (19), babies did initiate interaction with their mothers. These scores align with Feldman et al. (19), whose manual indicates that social initiation becomes more pronounced between three and seven/eight months, and scores above 2-3 are rare in early months.

Communicative initiative is most evident when the baby attempts to attract the interlocutor's attention and retain it when distracted for instance, the baby looks and vocalizes toward the partner while they

are speaking to someone else (27). During pauses, the baby uses this time to regulate arousal and/or take initiative in interaction (28). Observing this behavior is part of the OLLIAC protocol, used as an indicator in cases of suspected autism risk (29).

At four months, there was an increase in initiative frequency—the mean rose from 1–2/5 CIB at two months to 2–3/5 CIB at four months, with a statistically significant difference between the two groups. At four months, babies initiated significantly more during free and object conditions ($p < 0.05$), but no statistical difference was found during the song interaction. One study indicates that as early as two months, babies anticipate turn endings to start their communicative turn, with this ability increasing between 12 and 18 weeks (13).

Lacheret-Dujour et al. (30) demonstrated that, even without knowing the baby's age, listeners implicitly attribute greater intentionality to vocalizations of five-month-olds compared to one-month-olds. It is likely that mothers gradually grant more prominence to the baby in interaction, perceiving them as increasingly active interlocutors with "something to say" (13). These findings align with our observations of higher maternal recognition at four months and decreased substitution, which may have facilitated turn-taking by younger babies.

Comparing the three recording moments, we noted that two-month-olds showed greater initiative during free interaction and the song (mean score 1.92), whereas four-month-olds initiated more frequently during free and object conditions (2.44). Over time, babies may lose interest in purely vocal exchanges and show more engagement in multimodal play involving shared object play and activities (8).

Regarding maternal variables, the present study found moderate recognition scores (~3/5 CIB) and low substitution scores (~1/5 CIB). No statistical differences were observed between age groups, but at four months recognition scores were slightly higher and substitution lower across all recorded moments. Due to the gradual perception of baby intentionality (13), it is possible mothers adjusted by using more hyper-stimulation behaviors (15), especially at two months. Additionally, the controlled lab environment may have influenced maternal behavior and favored this hyper-stimulation.

Considering the baby's influence, it is hypothesized that moderate gaze and low vocalization and initiative frequencies may have affected maternal recognition, as babies communicate multimodally (7,8); however, studies show mothers respond more to vocalizations than other forms of infant communication (31), and this response is more frequent with older babies than younger ones (13). Moreover, researchers report a progression of recognition over time and through daily experience, allowing parents and children to better tune into each other's cues and rhythms (16).

Synchrony in interaction was measured using three dyadic codes: reciprocity, regulation, and fluency (19). All these variables scored around 3/5 CIB at both ages and across all conditions, suggesting moderate presence of these behaviors in mother-baby interaction at two and four months. Therefore, our study supports the existence of early mother-baby synchrony (8).

According to the literature, since birth mothers employ three distinct vocal modalities in interactions with their babies: speech, singing, and humming. These vocal forms incorporate musical elements that enhance coordination and synchrony within the mother-baby dyad (32).

Feldman (14) notes that affiliative bonds form through repeated exposure to each partner's interactive behavior and coordination of physiological states—suggesting the dyad's capacity to establish synchronous exchanges evolves over time. Our study found no statistical differences between age groups in terms of synchrony, only a slight increase in mean scores at four months, except fluency during free interaction, which remained at 3/5 CIB at both ages. The stability of fluency suggests that interaction flow depends not only on baby age, but also on maternal sensitivity and responsiveness,

which remained consistent in this sample.

The highest mean scores were obtained during free interaction at both ages, including dyadic means (reciprocity, regulation, and fluency). This finding may relate to the preference for face-to-face and purely vocal play in early months (8,32), but may also be influenced by the testing environment. Mothers may have persisted with the standardized toy or singing even in the absence of baby interest, in an effort to adhere to instructions—evident by decreased maternal recognition and baby responses (gaze and vocalization) in these conditions.

For balance during the interactions between caregivers and babies, there must be moments of engagement as well as disengagement. Parents need to provide stimulation, but also respond to signs of the baby's disengagement and social withdrawal by reducing stimulation (33). Beebe & Steele (34) advocate for a 'midrange model' as the optimal level of stimulation in parent-baby interactions.

The main limitation of the present study concerns the analysis process, which was not conducted in a double-blind format and may have introduced some bias in the interpretation of the results.

Finally, further research is needed to deepen the understanding of early interactions between babies and adults in varied and more natural contexts, minimizing methodological interferences in the outcomes.

CONCLUSION

The findings of the present study indicate that mother–infant interaction is shaped by both the context of interaction and the stages of infant development, with synchrony emerging as a dynamic process that evolves over time. From the earliest months of life, infants demonstrate the capacity to direct their gaze, vocalize intentionally, and initiate multimodal exchanges, reflecting active engagement in relational encounters with their mothers.

As these communicative competencies develop, a corresponding increase in maternal sensitivity to the infant's signals is observed, often resulting in a reduction of substitutive behaviors. The free interaction context yielded the most favorable outcomes regarding maternal behaviors, infant responses, and dyadic synchrony, possibly due to the predominance of face-to-face exchanges during this developmental phase and the greater participatory flexibility afforded to both partners.

These results contribute to a deeper understanding of early interactive processes and underscore the relevance of clinical environments that promote spontaneous, attuned, and responsive interactions adapted to the infant's developmental needs.

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ABBREVIATIONS

UFMG: Universidade Federal de Minas Gerais

HC/UFMG: Hospital das Clínicas da Universidade Federal de Minas Gerais
CIB: Coding Interactive Behavior

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Figures and tables

Figure 1. Room layout: (A) - Camera, (B) – Cushion, (C) – Baby car seat, (D) – Mirror, and (E) – Screen.

Figure 2. 3D Simulation of the Data Collection.

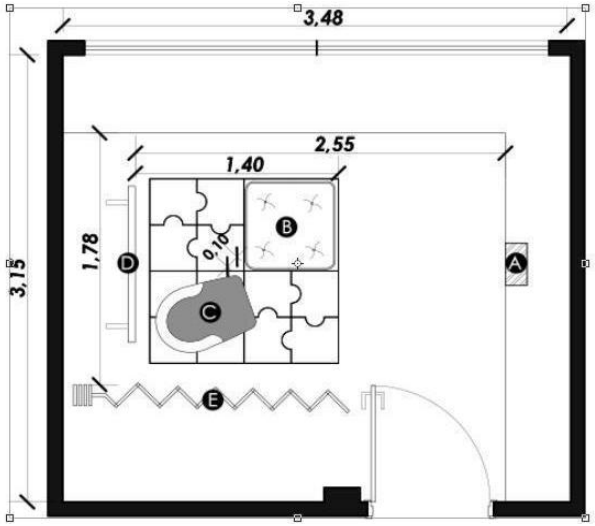

Figure 1. Room layout: (A) - Camera, (B) – Cushion, (C) – Baby car seat, (D) – Mirror, and (E) – Screen.

Figure 2. 3D Simulation of the Data Collection.

Table 1. Distribution of results between the two- and four-month periods for the variables gaze, vocalization, and initiative.

Variable	Moment	Two months (n=25)	Standard Deviation	Four months (n=25)	Standard Deviation	p-value
Gaze	Free	3.16	(±1.07)	3.56	(±0.71)	0.12
	Object	3.08	(±1.15)	3.44	(±0.82)	0.17
	Song	2.96	(±1.10)	3.52	(±0.71)	**0.02***
Vocalization	Free	2.48	(±0.82)	2.60	(±0.96)	0.54
	Object	2.24	(±1.01)	2.20	(±0.82)	0.83
	Song	2.08	(±1.22)	2.36	(±0.81)	0.16
Initiative	Free	1.92	(±0.99)	2.44	(±0.92)	**0.03***
	Object	1.84	(±0.94)	2.44	(±0.82)	**0.01***
	Song	1.92	(±1.04)	2.24	(±0.78)	0.21

*Note: mean (± standard deviation); *p-value < 0.05.*

Table 2. Distribution of results between the two- and four-month periods for the variables recognition and substitution.

Variable	Moment	Two months (n=25)	Standard Deviation	Four months (n=25)	Standard Deviation	p-value
Recognition	Free	3.28	(±0.84)	3.36	(±0.76)	0.67
	Object	2.88	(±1.01)	3.00	(±0.91)	0.57
	Song	2.80	(±0.96)	3.08	(±0.86)	0,25
Substitution	Free	1.32	(±0.63)	1.12	(±0.33)	0,20
	Object	1.56	(±0.77)	1.40	(±0.58)	0,40
	Song	1.48	(±0.82)	1.20	(±0.41)	0,16

*Note: mean (± standard deviation); *p-value < 0.05.*

Table 3. Distribution of results between the two- and four-month periods for the variables reciprocity, regulation, and fluency.

Variable	Moment	Two months (n=25)	Standard Deviation	Four months (n=25)	Standard Deviation	p-value
Reciprocity	Free	3.12	(±0.97)	3.32	(±0.85)	0.39
	Object	2.72	(±1.02)	3.00	(±0.87)	0.21
	Song	2.72	(±1.02)	3.04	(±0.84)	0.20
Regulation	Free	3.04	(±1.02)	3.12	(±0.67)	0.72
	Object	2.76	(±1.09)	3.00	(±0.76)	0.31
	Song	2.76	(±1.05)	3.00	(±0.71)	0.32
Fluency	Free	3.00	(±1.08)	3.00	(±0.76)	1.00
	Object	2.80	(±1.19)	2.88	(±0.83)	0.76
	Singing	2.76	(±1.13)	2.80	(±0.82)	0.87

*Note: mean (± standard deviation); *p-value < 0.05.*