

Independent sitting attainment is associated with longer, but not more frequent, speech-like vocalizations



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Is sitting attainment between 6 and 9 months of age associated with changes in infant vocal production?

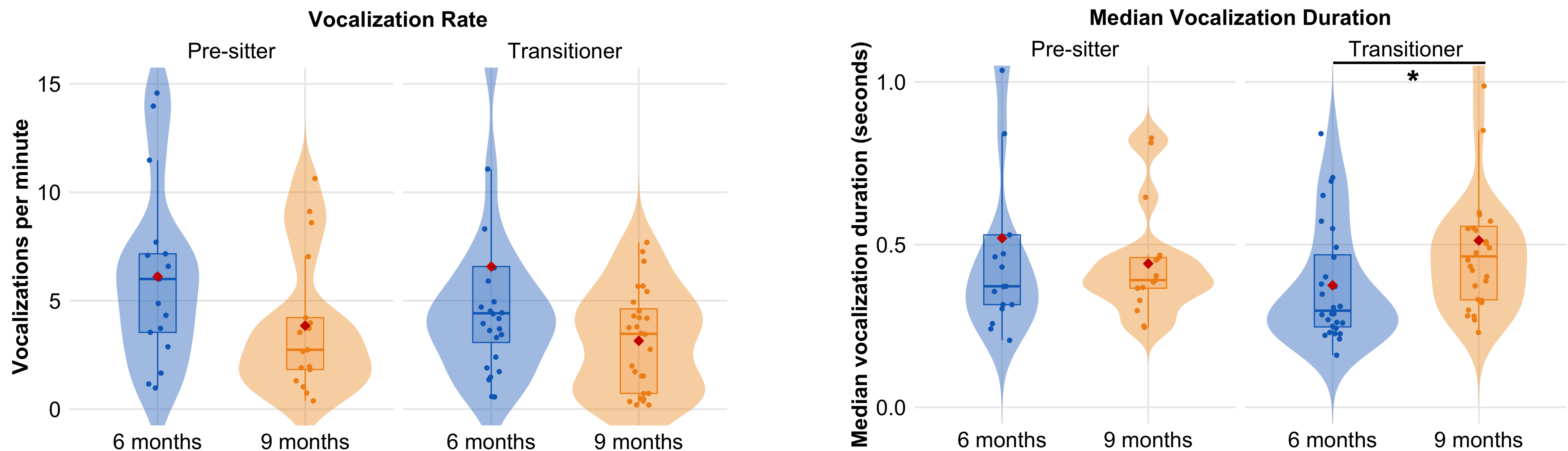
Data coding: Infant speechlike vocalizations (Buder et al., 2013) and Alberta Infant Motor Scale [AIMS] - Sitting.

Participants: Forty five infants tested longitudinally at 6 (M = 202 days, SD = 11) and 9 months (M = 273 days, SD = 18.6) of age.

Activity: Video-recorded, 5-minute dyadic play with objects affording different manual actions.

Groups: Using AIMS, infants were classified into **pre-sitters** or infants who remained non-sitters at both time points (n = 17; at 6 months M = 202 days, SD = 11.1; at 9 months M = 275 days, SD = 9.43) and **transitioners** or infants who were non-sitters at 6 months but sitters by 9 months (n = 28; at 6 months M = 202 days, SD = 11.2; at 9 months M = 272 days, SD = 22.5).

Figures include a dot for each participant's observed rate per minute and median duration. Overlaid boxplots indicate the median and interquartile range for each group. Red diamonds indicate mean value per group.



Negative binomial GLMM with group x time point as fixed effects, offset by session duration, and a random intercept per participant.

Vocalization rate did not differ by sitting attainment (group x time point interaction: $RR = 0.81$, $z = -0.63$, $p = .53$). Main effects of group and time point were not significant (all $ps > 0.05$).

Linear model on individual change scores of median vocalization duration (change score = median duration at 9 months - median duration at 6 months).

Transitioners had a significantly greater increase in median vocalization duration than pre-sitters ($b = 0.22$, 95% CI [0.01, 0.42], $t = 2.10$, $p = .04$).

Discussion

- The period between 6 and 9 months is one of significant changes in vocal and motor development (Fagan, 2010; WHO Multicentre Growth Reference Study Group, 2006). Iverson (2022) suggested that independent sitting could positively impact vocal production due to its biomechanical and socio-cognitive affordances.
- In our findings, **the attainment of independent sitting was associated with an increase in median duration but not frequency**. Unlike pre-sitters, transitioners showed an increase in median vocalization duration over this period.
- The attainment of independent sitting may favor longer vocalizations because of its biomechanical features such as placing the trunk and neck in an upright static position (Graziosi et al., 2024; Yingling, 1981). This could explain why infants who remained non-sitters by 9 months did not show a significant increase in median vocalization duration over this period compared to the infants who became independent sitters by 9 months.

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