**Supplementary Materials**

*Passive Musical Engagement Mediation and Moderation Analyses: Direct, indirect, and interaction effects on infants’ receptive vocabulary*

Infants’ Distraction events during Vocal tracks was also used as mediator between Passive Musical Engagements (high/low exposure to background music) at 6 months and receptive vocabulary (CDI-WC) at 14 months. The results suggested that the influence of exposure to background music on receptive vocabulary size is totally mediated by infant early attentional measures (Distraction during Vocal tracks, in this case). Specifically, the indirect effect of Passive Musical Engagements on CDI-WC through infants’ Distraction during Vocal tracks was significant with B = 23.90, SE = 12.64, 95% CI = 1.11-50.54. However, the direct effect of exposure to background music on CDI-WC was not significant with B = 49.73, SE = 31.14, 95% CI = -14.70-114.16. In sum, having experienced background music affects infants' distraction to vocal tracks, which in turn is associated with children's receptive vocabulary size.

Next, the interaction between Passive Musical Engagement (high/low exposure to background music) and maternal sensitivity (PCERA maternal total mean score) on children’s receptive vocabulary size was tested in a moderation model. The model explained 30% of variance, *F*(3,17) = 2.44, *p* = .09, with the interaction effect of high/low exposure to background music X PCERA score being non-significant (β = .08, p = .72, respectively). This means that maternal sensitivity as measured by PCERA total mean score did not moderate the effect of Passive Musical Engagements on infant receptive vocabulary (CDI-WC).

*Summary*

The influence of exposure to background music is mediated by infant distraction during vocal tracks. As revealed for Active Music Engagements (see Discussion), higher levels of exposure to ID-singing may increase the level of familiarity with sung words, hence reduce the preference for vocal over instrumental tracks. At a speculative level, this may indicate a greater processing of linguistic information supported by ID-singing, which would be associated with better gains in early language development. Similarly, but with a weaker effect, high levels of exposure to background music may also provide experience with rich sung materials, and this may in turn also facilitate language processing. It is possible that this experience simply provides similar but weaker effects compared to active singing interactions: it influences infant’s processing during the experiment (e.g., with higher familiarity to sung words), but it is this effect on infant perception that is the basis for the gains in CDI-WC observed in the high-background music exposure group. Once this infant perceptual variable is taken into account in a mediation model, the direct effect of background music exposure on vocabulary gains (as found in the ANOVA) is no longer significant. This result aligns with superior effects of direct interaction compared to indirect experience (e.g., through a TV screen) established in previous studies (Kuhl et al., 2003)[[1]](#footnote-1).

1. Kuhl, P. K., Tsao, F. M., & Liu, H. M. (2003). Foreign-language experience in infancy: Effects of short-term exposure and social interaction on phonetic learning. *Proceedings of the National Academy of Sciences*, *100*(15), 9096-9101. [↑](#footnote-ref-1)