Re: Submission of invited Opinion Paper “Understanding Voice Naturalness”

Dear Lindsey,

Many thanks for inviting us to submit an *Opinion Paper* for *Trends in Cognitive Sciences* entitled *Understanding Voice Naturalness*, based on our presubmission enquiry from July 1, 2024. Together with my co-authors Sascha Frühholz and Stefan R. Schweinberger, I am pleased to submit this paper today with all necessary attachments for your consideration at *Trends in Cognitive Sciences*.

Our topic, naturalness of voices, is highly timely for several reasons: Fast progress in voice synthesis technology quickly invades everyday life, both in good use (synthesized voices in customer service calls, gaming environments, support platforms) and abuse (deepfakes, deception). Crucially however, perceiving a voice as a natural one refers to a scientifically ill-defined process – despite being a highly intuitive one.

In this paper, we show that although a substantial and increasing body of modern research has focused on voice naturalness, separate research communities (e.g., in computer science or voice pathology) unfortunately use the same term to refer to very different concepts. Accordingly, despite the undisputed importance of voice naturalness, the field lacks consensus on how to measure naturalness. We also provide substantial quantitative evidence to show that communication between divergent research communities is currently lacking, as are systematic attempts to integrate naturalness into existing voice perception theory.

We trust you will find that out paper compellingly addresses this gap in conceptualization. In the paper, we provide a concise definition of voice naturalness, and we develop a conceptual framework that is rooted in voice perception models and current empirical findings. We also discuss a number of perspectives for future research, with specific attention to how naturalness research could become relevant for multisensory research, research into animal communication, or neuroscience.

We hope you agree that this paper will be of interest to *TiCS* and its readers, and we look forward to your response

With kind regards,

Christine Nussbaum (on behalf of all authors).