The social code of speech prosody must be specific and generalizable

Sarah Knight, Nadine Lavan, Elise Kanber and Carolyn McGettigan

Department of Psychology
Royal Holloway, University of London, UK

Ponsot et al [1] used speech transformation algorithms and reverse correlation techniques to derive pitch contours for the word "bonjour", constituting prosodic prototypes for trustworthy and dominant speech. The use of reverse correlation is a powerful method that allows the properties of complex expressions to be inferred from listeners' perceptual responses to randomly varying stimuli. It is an exciting development that this elegant, data-driven approach has now been applied to social traits in voices.

We strongly welcome innovative research into the social aspects of voice. Here, we would like to raise two key issues that the research community should consider when applying this new method to the study of voices.

The first is the specificity of the relationship between the prototype (in this case the intonation contour) and listeners' underlying concepts of a given trait. Trustworthiness is hard to define [2], context-dependent [3,4] and difficult to capture using explicit measures [5]. Dominance may at first glance seem more straightforward, but it too has suffered from a lack of theoretical and operational consensus, with implicit understanding often deemed sufficient [6]. While it is impressive that Ponsot et al's [1] prototypes yielded generally opposing percepts of trustworthiness and dominance, it is relevant to show that these prototypes are distinct from percepts of emotional state (e.g. happiness rather than trustworthiness), physical attributes (e.g. body size rather than dominance), and even linguistic cues (e.g. question vs. statement, as in Ponsot et al's pilot study).

The second concern is the generalizability of the prototype across multiple utterances, speakers and contexts. In the current study, the prototypically "trustworthy" pitch contour derived from "bonjour" did not successfully induce perceptions of trustworthiness when applied to other two-syllable words. The authors acknowledge that this may be due to mismatches between the more fine-grained trustworthiness prototype and utterance-specific acoustic-phonetic features (p4). However, this casts doubt on their claim that these pitch contours constitute a robustly inter-individual "generic code" (p4) for trait judgements that can reliably be applied to other (longer) utterances. Related to this, the authors interpret a non-linear relationship between pitch change and perceived trustworthiness as evidence that voices can sound "too trustworthy" (p4). This is an intriguing claim, which the authors support with evidence from studies examining amygdala activation to [un]trustworthy faces. However, it appears to stand in direct contrast to recent work in which the acoustic parameters of voices were synthetically extended beyond the endpoints of a trustworthiness continuum, with listener ratings of trustworthiness linearly reflecting these extensions [7]. These conflicting findings point to the difficulty of deriving fully replicable, meaningful and comparable social trait judgements across different domains and paradigms.

Thus, while we are greatly encouraged at the development of new tools to study the social voice, we do not yet share the authors' confidence in the specificity and generalizability of their method. However, we look forward to seeing more evidence of how this exciting new approach can be applied to further understanding of the human voice.

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