What's in a Voice?

An Ecological Approach to Non-Verbal Information from Speech

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ABSTRACT

In a very obvious sense, speech provides information about the speaker ie they can simply tell us their age, gender etc! The central hypothesis of this study was that information is also available on a different level - that of non-verbal vocal information. Sixteen voice recordings were collected from eight speakers, with each speaker providing two speech episodes - the reading of a set passage and the description of an object. A selection of these recordings were played to eleven participants (listeners) such that each episode was heard a total of four times. By a method of semi-structured interviews after each voice recording, the number and range of judgements listeners were willing to make about speakers was investigated. In addition to answering set questions about, among other things, age, sex, height, weight, intelligence and attractiveness, the listeners (as a group) provided between 10 and 30 other judgements about each speaker. These ranged from their typical dress and the colour of their hair to, in more than one case, their religious denomination! In the second part of the study, the most common of these judgements were investigated further. The object description episodes were dropped due to practical difficulties and time constraints. A (generally multiple choice) questionnaire was devised and presented to thirty-one participants in conjunction with the voice recordings. In this stage, all participants heard all set passage episodes, and all answered the same questions on them. It was found that ***age, sex*** and ***height*** appeared to be accurately specified. Some limited accuracy was also found in judgements of ***area of origin, marital status, sports participation, hair colour and length and gross earnings.*** Age may be implicated in judgements of hair colour and marital status, and gender in judgements of hair length. Gender may also be a factor in judgements of gross earnings and height, although there appears to be some gender-independent information. Nevertheless, the presence of accurate judgements suggests there is some information available for these judgements, whatever the source of that information may appear to be. The reasoning behind this stance, and its implications, are discussed. Further, it is suggested that speech provides non-verbal information for at least five accurate, independently specified variables. These variables were: ***combined physical and social age, combined physical and social gender, height, geographical tenancy relative to the listener*** and ***social position.*** Theoretical implications, limitations of the current study, and possibilities for further research are also discussed.

INTRODUCTION

Some definitions

In all of this report, the words vocal and verbal will be used extensively. In everyday usage these are often treated as interchangeable but here they have very specific meanings. Verbal means specifically of words, whilst vocal simply means of the voice.

Representationalism, The Ecological Approach and The Present Study

As the title indicates, the author takes an ecological perspective on perception. In contrast to representational theories, the ecological perspective considers that the environment provides sufficient information to specify itself. Perception need not be (and isn't) dependent on the construction of meaning from impoverished cues via 'previous knowledge'. The organism is considered to be an active agent in the environment that can 'pick-up' information from the perceptual array.

However, as we shall see in the discussion, it would be possible to interpret the findings of the present study from either a representational, or an ecological, viewpoint. In what sense, then, does this study embody an ecological approach? It is described as ecological because of what it studies rather than what it proves. The

representationalist perspective tends to go hand in hand with certain experimental methods and certain questions. The ecological approach asks different questions and often uses different types of experiment. It is not necessary to give a full review of all the differences. Instead, I will briefly discuss two areas relevant to the current investigation - the traditional view of sound and an ecological perspective on vision. Following this, ecological acoustics will be introduced.Ecological vision was chosen to provide the initial examples because it is a more mature field, and it contains some examples that parallel the aims of the present investigation.

Traditional Questions and Experiments in Sound

Traditional investigations of sound have concentrated either on speech or on tonal sounds. Brief, isolated and simplified sounds are generally utilised. In studies of speech, phonemes or syllables are the main units of investigation[1]; in non-speech, short, spectrally stable sounds. Yet such sounds, as they are presented, are uncommon in the everyday environment - one seldom hears a disconnected phoneme, for instance. Hence, there appears to be a large disparity between what is studied, and what is actually heard.

Nevertheless, the decision to maintain this style of investigation appears to be a deliberate one, and one driven by a particular (reductionist) philosophy. The argument is that, if we understand these sounds, which

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[1] The are not the only ones, however. In particular, work on prosody (see later) is interesting.