Quantifying Vocal Fatigue in Voice Actors After a Routine Recording Session

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The ability of occupational voice users to conduct professional work is negatively impacted once their vocal endurance or voice quality is put at risk. Occupational voice users include professionals such as teachers, radio hosts, vocal performers, counsellors, and actors. These professionals often complain of tiredness or a weak voice after prolonged voice use, which clinicians define as vocal fatigue. The popularity of studies of vocal fatigue in singers and teachers is overwhelming and many occupational voice users, such as voice actors, are unrepresented in current research. Voice actors are superior study subjects since they are required to recite tedious and repetitive dialogue in a range of tones, intensities and pitches outside of their normal vocal range. This provides ecological valid conditions which can be exploited to eliminate the common artificialities which arise in many studies where a subject is given a non-routine task to induce voice fatigue.

The research question of this study is twofold; to determine if negative voice changes from vocal loading are inevitable and what amount or nature of the voice can be considered safe in voice acting routines. Through the use of Hunter’s self-administered vocal rating (SAVRa), a self-reporting tool of voice fatigue is implemented to track the onset of voice fatigue and the recovery trajectory of the voice actors’ voices over a period of time after a routine voice recording session. Additionally, a glottal notch accelerometer (GNA) is implemented as a non-invasive tool to evaluate vocal performance during a routine recording session to assess the onset of vocal fatigue. This device allows the discrimination of normal, pressed and breathy voice as well as the acquisition of voice acoustic metrics. Through the acquisition of these metrics, paired with a collection of perceived symptoms, it is possible the onset of vocal fatigue can be predicted.

With these methods, the viability of two legacy interventions; hydration and semi-occluded vocal tract (SOVT) exercises, is tested to minimize the effects of vocal fatigue. This research aims to understand the acoustic and perceptual conditions which arise due to vocal strain in voice actors. The results will help determine if the onset and recovery of vocal fatigue can be attenuated or delayed by the application or absence of interventions such as hydration and semi-occluded vocal tract exercises.

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