

Vocal Symptoms Among Finnish Tour Guides and Museum Guides: Prevalence and Possible Risk Factors

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Abstract for Master's thesis

Subject: Speech and Language Pathology	
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Title of the work: Vocal Symptoms Among Finnish Tour Guides and Museum Guides: Prevalence and Possible Risk Factors	
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Abstract: <p>For occupational voice users, the voice is a primary tool of trade. Voice disorders are generally more common in individuals with vocally demanding occupations, not only because of prolonged voice use, but also because of susceptibility to environmental risk factors. Although guides have been mentioned as an occupational group with high vocal demands, research regarding the prevalence and risk factors of voice disorders among this group is still scarce. The purpose of this study was to investigate the prevalence of vocal symptoms and voice disorders among guides in Finland, as well as explore possible vocal risk factors in Finnish guides' work environment.</p> <p>Data was collected via an online questionnaire sent out via e-mail through eighty-seven local tour guide associations, a closed Facebook group for guides, and seven museums. The questionnaire included demographic and health-related questions, as well as questions about voice use and vocal symptoms. A voice ergonomic assessment in seven different museums' exhibition areas was conducted using a voice ergonomic assessment tool. In total, 194 guides participated in the study.</p> <p>Of the respondents, 11% experienced four or more frequently occurring vocal symptoms, which can be defined as a voice disorder. The most common frequently occurring vocal symptom was a need for throat clearing while speaking, reported by 13.7% of the guides. The health-related risk factors asthma and chronic rhinitis, as well as stress and frequency of guiding, had a significant association with the number of frequently occurring vocal symptoms. The most common self-reported environmental risk factors were perceived reverberation and disturbing background noise, reported by 30.3% respectively 31.5% of the guides as occurring weekly or more often. Voice ergonomic risk factors were found in all seven museums. The most common risk factors were reverberation, observed in five museums, and clearly audible noise from adjacent rooms or other places, observed in every museum.</p> <p>Voice disorders are quite common in guides, occurring in 11% of the participants, but the prevalence seems to be lower compared to other vocally demanding occupations, which might be explained by the frequency, duration and knowledge of voice use, as well as by methodological differences in distinguishing individuals with or without a voice disorder. The results imply that guides are susceptible to specific environmental factors and could therefor benefit from preventative voice ergonomic measures such as voice amplification.</p>	
Key words: museum guides, occupational voice disorder, prevalence, risk factors, tour guides, voice ergonomics	
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Abstrakt: <p>Rösten är det viktigaste arbetsredskapet för personer med ett röstkrävande yrke. Röststörningar är vanligare bland personer med röstkrävande yrken, inte enbart på grund av långvarig röst användning, men också på grund av riskfaktorer i arbetsmiljön. Guidning har beskrivits som ett röstkrävande yrke, men forskning om prevalensen av röststörningar och riskfaktorer för röstsymptom bland guider är knapphändig. Syftet med denna studie var att undersöka förekomsten av röstsymptom och röststörningar, samt möjliga riskfaktorer för dessa, bland guider verksamma i Finland. Ett annat syfte var att undersöka förekomsten av möjliga röstergonomiska riskfaktorer i guidernas arbetsmiljö.</p> <p>Data samlades in med en webbenkät som distribuerades till guiderna via 87 lokala guideföreningar, en sluten Facebook-grupp för guider och sju olika museer. Enkäten innehöll frågor om deltagarnas bakgrund, hälsotillstånd, röst användning och röstsymptom. En röstergonomisk kartläggning av arbetsmiljön gjordes i sju olika museer med ett röstergonomiskt bedömningsinstrument. Sammanlagt 194 guider deltog i studien.</p> <p>Sammanlagt 11 % av deltagarna upplevde fyra eller flera ofta förekommande röstsymptom, vilket kan klassas som en röststörning. Det vanligaste ofta förekommande röstsymptomet var behov av att harkla då man pratar, vilket rapporterades av 13,7 % av deltagarna. De hälsorelaterade riskfaktorerna astma och långvarig snuva, samt stress och hur mycket deltagarna guidade, hade ett signifikant samband med antalet ofta förekommande röstsymptom. De vanligaste självrapporterade riskfaktorerna i arbetsmiljön var eko och störande bakgrundsbuller, vilka rapporterades förekomma i guidernas arbetsmiljö veckovis eller dagligen hos 30,3 % respektive 31,5 % av guiderna. Röstergonomiska riskfaktorer observerades i alla de sju besökta museerna. De vanligaste röstergonomiska riskfaktorerna var eko, som observerades i fem museer, samt buller från angränsade rum eller andra platser, som observerades i alla museer.</p> <p>Röststörningar är relativt vanliga bland guider och förekom hos 11 % av deltagarna i studien. Förekomsten verkar vara lägre än hos personer i andra röstkrävande yrken, vilket möjligen kunde förklaras med hur ofta deltagarna guidar och att många deltagare fått handledning i röst användning, samt metodologiska skillnader i definitionen av hur en person med röststörning urskiljs från en person utan röststörning. Resultaten tyder på att guider är utsatta för specifika riskfaktorer i sin arbetsmiljö och kunde därför dra nytta av förebyggande röstergonomiska åtgärder såsom röstförstärkning.</p>	
Nyckelord: guider, museiguider, prevalens, riskfaktorer, röstergonomi, röstkrävande yrke	
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1. Introduction

A well-functioning voice is an essential tool for one third of the labor force (Vilkman, 2004). In voice-demanding occupations, the person relies on his ability to produce voice as a primary tool of trade (Titze, Lemke, & Montequin, 1997; Wingate, Brown, Shrivastav, Davenport, & Sapienza, 2007). Voice-demanding occupations include, but are not limited to, teachers, clerical workers, lawyers, telemarketers and tour guides (Titze, 1997; Williams & Carding, 2005). Voice disorders are generally more common in vocally demanding occupations (Verdolin & Ramig, 2001), especially in professions that not only require prolonged voice use, but also include vocal risk factors such as poor room acoustics and lack of voice amplifiers (Vilkman, 2000). Although guides have been mentioned as an occupational group with high vocal demands (Williams & Carding, 2005), research regarding voice use and vocal symptoms, as well as information about vocal risk factors in the work environment of guides is still scarce.

1.1 Voice disorders and voice symptoms

The three components of voice production are respiration, phonation and resonance. The airflow from exhalation builds up the subglottal pressure, which activates the vocal fold vibration in the adducted vocal folds. The produced sound waves are amplified in the supra-glottal cavities (for an overview of typical voice production, see e.g. Boone, McFarlane, Von Berg, & Zraik, 2013). When the interaction between breathing, phonation and articulation is affected, a voice disorder might arise (Hammarberg et al., 2008). According to the American Speech-Language-Hearing Association, a voice disorder is present when an individual expresses a concern about having an abnormal voice that does not meet daily needs—even if others do not perceive it as different or deviant (American Speech-Language-Hearing Association [ASHA], 1993). Roy, Merrill, Gray, and Smith (2005) defined a voice disorder as any time the voice does not work, perform, or sound as it normally should, so that it interferes with communication. Another widely used definition of voice disorder is that a voice disorder occurs when the voice quality, pitch, and loudness differ or are inappropriate for an individual's age, gender, cultural background, or geographic location (Aronson & Bless, 2009; Boone et al., 2013). Additionally, voice disorders are generally characterized by an abnormal pitch, loudness and vocal quality separately or in combination, resulting from disordered laryngeal, respiratory, and vocal tract functioning (Raming & Verdolini, 1998).

In addition to the term *voice disorder*, the terms *voice symptom* or *vocal symptom* are frequently used in the literature, and refer to a temporary symptom in the voice, throat or voice box. Screen11, a screening tool for voice disorders, consists of questions regarding the frequency of eleven vocal symptoms. Screen11 (see Table 1) was developed from Screen6 (Simberg, Sala, Laine, & Rönnekaa, 2001), which consists of the same vocal symptoms as in Screen11, although with multiple statements regarding some questions. Screen6 has been widely used in studies investigating the prevalence of voice disorders and vocal symptoms (Fellman & Simberg, 2016; Hagelberg & Simberg, 2015; Ohlsson et al., 2015; Simberg, Sala, Vehmas, & Laine, 2005; Simberg et al., 2009), although, as opposed to Screen11, it has never been validated. In a study by Zenger (2019), Screen11 was shown to exhibit strong convergent validity by correlating well with the voice disorder questionnaires VHI (Voice Handicap Index) (Jacobson, 1997) and VAPP (Voice Activity and Participation Profile) (Ma & Yiu, 2001). Additionally, the optimal cutoff score for voice disorders in Screen11 was determined to be four or more vocal symptoms occurring weekly or more often (Zenger, 2019).

There is a wide variation in the reporting of prevalence of voice disorders. Prevalence varies depending on the definition of voice disorders and the methodological differences in procedures (Verdolini & Ramig, 2001). In a cross-sectional telephone survey study conducted by Roy et al. (2005) with over 1300 participants from the general population, the self-reported prevalence of a current voice disorder was 6.6%, while the life-time prevalence of a voice disorder was 29.9%. Cohen (2010), who investigated the prevalence of dysphonia in a primary care population with nearly 800 participants, reported of similar numbers in the point prevalence (7.5%) and lifetime prevalence (29.1%) of self-reported dysphonia (Cohen, 2010). Furthermore, the prevalence of dysphonia was investigated in a U.S. health care database with almost 55 million individuals, and the point prevalence for diagnosed dysphonia was reported as almost 1% (Cohen, Kim, Roy, Asche, & Courey, 2012). Verdolini and Raming (2001) estimated that about 3–9% of the general US population has a voice disorder at any given moment in time. In a Swedish cohort study, the prevalence of a voice disorder in the general population, that included participants under 65 years of age, was reported as 2.2% (Lyberg-Åhlander, Rydell, Fredlund, Magnusson, & Wilén, 2018). On average, women's vocal folds vibrate with a higher frequency compared to men's vocal folds, causing more vocal fold collisions per second, which is likely an important factor for why voice disorders are more prevalent in

women compared to men (Cohen et al., 2012; Lyberg-Åhlander et al., 2018; Roy et al., 2005). Voice disorders are also more common among the elderly population, as a result of natural physiological and functional changes in the vocal folds (Cohen et al., 2012; Gregory, Chandran, Lurie, & Sataloff, 2012).

There are several approaches to classify voice disorders (Sapienza & Ruddy, 2009). One widely accepted approach is to classify them as either functional, organic, or neurologic (Boone et al., 2013; Sapienza & Ruddy, 2009). The American Speech-Language-Hearing association simplifies the classification even further, dividing it into organic and functional voice disorders, with structural and neurogenic voice disorders being a subgroup of organic voice disorders. An organic voice disorder is physiological in nature, and caused by alterations in the respiratory, laryngeal, or vocal tract mechanisms, while functional voice disorders are caused by improper or inefficient use of the vocal mechanism (ASHA, n.d.). Neurogenic voice disorders are caused by problems with the central or peripheral nervous system innervation to the larynx that affect functioning of the vocal mechanism (ASHA, n.d., Boone, et al., 2013; Sapienza & Ruddy, 2009). Voice disorders are usually caused by a combination of genetic and environmental factors. Results from a twin study conducted by Simberg et al. (2009), with over 1700 participants, indicated that voice disorders were explained by genetic effects to 35% and environmental effects to 65%. The researchers also found that for the participants who worked in voice-demanding occupations, the causes of a voice disorder was more environmental, whereas the etiology of the symptoms was more strongly affected by genes in the participants with less voice-demanding occupations (Simberg et al., 2009).

1.2 Occupational voice disorders

The World Health Organization defines an occupational disorder as any disorder arising primarily as a result of exposure to risk factors arising from work activity (WHO, n.d.). In Finland, occupational disease is defined as a disease that is most probably caused mainly by exposure at work (Työterveyslaitos, n.d.). In a partially work-related disease, work-related exposure as a cause of the disease is less than 50% (Työterveyslaitos, n.d.). The work-related exposure can be of a physical, chemical or biological nature (Työterveyslaitos, n.d.).

Occupational voice disorders are believed to be a direct cause of repetitive collisions of the vocal folds, causing vocal attrition (Jones et al., 2002; Vilkmán, 2000). For example, vocal fold nodules can be viewed as an occupational voice disorder in

professions where heavy voice use is present, since they are developed due to loud and frequent voice use (Sala, 2004). It is also possible that a factor, such as a chemical component, could cause laryngitis with immediate allergy or immediate type specific hypersensitivity (Sala, Hytönen, Tupasela, & Estlander, 1996). There are also voice disorders that mainly occur in the workplace, although the primary cause of the voice disorder is health related. One example of this is laryngitis caused by laryngopharyngeal reflux. This condition can be nearly free of vocal symptoms when voice use is little, while vocal symptoms can occur in a vocally demanding workplace. When the condition is treated, the voice can also withstand the vocal demands of the workplace (Sala, 2004). Still, occupational voice disorders are usually caused by a combination of biological, personality and vocational factors (Sala, Rantala, & Simberg, 2019).

A professional voice user can be described as a person for whom voice is a primary tool of trade and whose livelihood depends partially or wholly on the ability to produce voice (Titze et al., 1997; Wingate et al., 2007). Vilkmán (2000) classifies voice and speech professions according to demands placed on voice quality and vocal load. According to him, teachers, telephone operators, telemarketers, and clergy have a moderate demand for voice quality, but a high vocal loading, while singers and actors both have a high demand for voice quality and high vocal loading. Vilkmán also highlights that while professions like foremen, welders, and platers have a low demand for voice quality, they still have high vocal loading since their job often requires them to give instructions in environments with high background noise (Vilkmán, 2000).

Vilkmán (2004) defines vocal loading as demands posed by voice use needs to the vocal organ, while Titze (2001) defines vocal loading as a long phonation time, high phonation frequency and high vocal intensity, either separately or in combination (Titze, 2001). Vocal loading can lead to overstrained laryngeal muscles, which can result in muscle fatigue. Vocal loading can also lead to mechanical stress of the vocal folds, resulting in swelling and stiffness (Titze, 2001). The amount of vocal loading for different professions has been investigated in a few studies. According to results from these studies, teachers (Chen, Chiang, Chung, Hsiao, & Hsiao, 2010) and kindergarten staff (Sala, Laine, Simberg, Pentti, & Suonpää, 2001; Sala et al., 2002) are subjected to more vocal loading than persons in less vocally demanding professions. Extended vocal loading is assumed to be one cause of the higher prevalence of voice disorders among teachers than in the general population (Roy, Merrill, Thibeault, Gray, & Smith, 2004; Villanueva-

Reyes, 2011). Whitling (2016) found that the vocal function of individuals with functional voice disorders is more affected by vocal loading compared to the vocal function of individuals without functional voice disorders. For these individuals, vocal recovery time is also longer (Whitling, 2016).

Voice disorders are common in professions with heavy vocal loading, that is professions that not only have demands on prolonged voice use, but also other vocal loading factors such as background noise, long speaking distance, poor room acoustics, and inadequate equipment (Vilkman, 2000). Professional voice users have a higher incidence of and an increased risk for voice disorders (Epstein, Remacle, & Morsomme, 2011). For teachers, the prevalence of a self-reported voice disorder was between two to three times more prevalent compared to the general population (Angelillo, Di Maio, Costa, Angelillo, & Barillari, 2009; Roy et al., 2004; Sliwinska-Kowalska et al., 2006). For telemarketers, the likelihood of at least one current vocal symptom was twice as likely compared with students (Jones et al., 2002). For priests, the prevalence of self-reported voice disorders was 18% (Hagelberg & Simberg, 2015), while the prevalence of two or more voice symptoms weekly or more often was 28.4% for soccer coaches (Fellman & Simberg, 2016). For guides, the prevalence of a voice disorder was reported as 21.3% (Sanssené, Bardi, and Welby-Gieusses, in-press).

1.3 Voice ergonomics

The field of voice ergonomics has emerged to improve voice and speech as tools for communication and includes all factors and measures that increase the possibilities for good voice and speech production and for hearing (Sala & Rantala, 2019). Risk factors for voice disorders can be both personal and environmental, and even a small improvement in voice ergonomic conditions can have an improvement in an individual's vocal function (Sala & Rantala, 2019). See Figure 1. for risk factors for voice disorders.

The Voice Ergonomic Assessment in Work Environment—Handbook and Checklist (VEAW; in Finnish and Swedish) created by Sala et al. (2009) is a voice ergonomic assessment protocol developed in Finland. The VEAW was originally developed for the clinical use of occupational health care experts, but has also been used in research (Rantala, Hakala, Holmqvist, & Sala, 2012). Although the VEAW was developed with regard to some of the more common work environments for occupational voice users, like classrooms, day care centers and open-plan offices, it can still be applied in other environments where occupational voice users might work (Sala et al., 2009). The

voice ergonomic risk factors included in the VEAW are noise, indoor air quality, working postures, working culture, and amplifier as an aid.

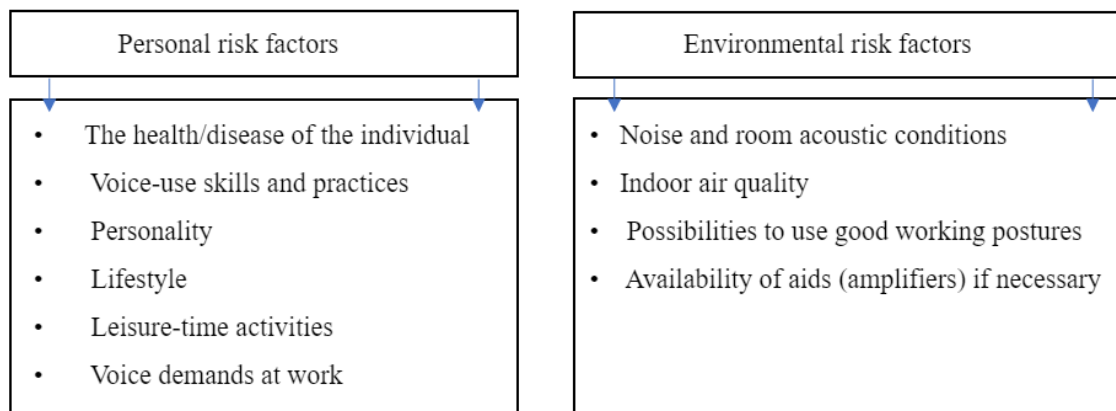


Figure 1. Personal and environmental risk factors for a voice disorder according to Sala & Rantala (2019).

Field studies as well as experimental studies have been conducted in order to investigate how different voice ergonomic risk factors affect the voice. According to Vilkmán (1996), ambient noise is a common risk factor for occupational voice disorders. High noise levels are common in work environments such as day care centers (Södersten, Granqvist, Hammarberg, & Szabo, 2002), restaurants (Zemke, Hertzman, Raab, & Singh, 2011), and school classrooms (Sala & Rantala, 2016). The Lombard effect, meaning the tendency to speak louder in places with high ambient noise levels, is notable when the ambient noise level exceeds 40 dB (van Heusden, Plomp, & Pols, 1979) and for each dB increase in ambient noise levels, there is a 0.6 dB increase in vocal loudness (Bottalico, Passione, Graetzer, & Hunter, 2017; Giguère et al., 2006). Using a louder voice causes vocal loading and composes a risk factor for developing a voice disorder (Vilkmán, 1996, 2004). Although there is Finnish legislation concerning environmental noise levels, the maximum recommended noise levels are related to hearing and does not consider vocal health. According to Finnish legislation, ambient noise levels should not exceed 35 dB in teaching environments and 45 dB in office environments (Finlex, 993/1992 § 3). Still, noise levels in many work environments are considerably higher than 35 – 45 dB, e.g. Södersten et al. (2002) reported that the average noise levels in ten different day care centers was 76.1 dB, while noise levels in a restaurant ranged between 60 and 70 dB (Zemke et al., 2011). Sala and Rantala (2016) reported that the average noise levels in 40 school classrooms were 68 dB.

Air quality also affects vocal health (Rantala et al., 2012). For example, dust (Geneid et al., 2009) and mold (Cummings, Fink, Vasudev, Piacitelli, & Kreiss, 2013), as well as dry indoor air (Hemler, Wieneke, & Dejonckere, 1997) has been linked to decreased vocal health. Organic and chemical impurities may trigger an allergic or inflammatory reaction in the laryngeal mucous membrane, which in turn can increase the risk for vocal symptoms. Low relative air humidity can in turn affect vocal health by making the vocal folds stiffer and more viscous (Hemler, Wieneke, Lebacqz, & Dejonckere, 2001). According to the Finnish classification of indoor environment and material emissions, the relative humidity should not be below 25% in indoor air at wintertime (Finnish Society of Indoor Air Quality and Climate, 2018).

Another risk factor affecting vocal health is a poor posture (Vilkman, 1996), which might hinder the intake of sufficient oxygen and consequently reduces the speaker's subglottal pressure and expiratory air volume (Child & Johnson, 1991). In addition, poor posture may lead to additional strain on the extrinsic and intrinsic muscles of phonation, as the speaker might try to compensate for inadequate expiratory volume during phonation, resulting in excessive tension of the intrinsic and extrinsic muscles of phonation (Child & Johnson, 1991).

1.4 Voice problems among guides

Until recently, epidemiological data regarding guides' voice use has been lacking, even though guides have been recognized as a group of workers with essential voice use, particularly if working outdoors or in poor acoustic environments (Williams & Carding, 2005). The study of Sanssené et al. (in press) on voice disorders in French tour guides is, to the best of my knowledge, currently the only published large-scale study investigating voice use and the prevalence of voice disorders in tour guides. In the study, information about the tour guides' voice use and voice disorders was collected through an online questionnaire containing the VHI-10 (Rosen, Lee, Osborne, Zullo, & Murry, 2004). A voice disorder was defined as a score of minimum ten out of a total of 40 in the VHI-10. Of the participants ($N = 465$), 21.3% had a voice disorder according to the VHI-10. The researchers also found work-related, environmental, and personal risk factors specific to tour guides. The work-related risk factors were prolonged voice use (more than 31 hours a week) and using a high intensity voice for more than six hours per week, which was significantly associated with higher pathological scores in VHI-10. Other risk factors included noise pollution and changes in temperature, as well as personal risk factors such

as being female, experiencing stress and anxiety, and having backpain (Sanssené et al., in-press). Preventative voice ergonomic education was uncommon among the tour guides. Of the French tour guides, 65.7% had never received guidance or training in voice care, neither during preservice program, nor during vocational training, and a high proportion of the tour guides did not know that health professionals are able to help them with their voice (Sanssené et al., in-press).

1.5 The purpose of the study

The purpose of the study was to investigate the prevalence of vocal symptoms among guides in Finland via an online questionnaire. An additional purpose of the study was to investigate the occurrence of possible vocal risk factors in Finnish guides' work environment.

2. Method

The Board for Research Ethics at Åbo Akademi University approved the study 4.6.2019. Information about tour guides' and museum guides' voice use and vocal symptoms was collected via an online questionnaire that was developed based on questionnaires used in previous research investigating the prevalence of voice disorders in other occupational populations (Fellman & Simberg, 2016; Hagelberg & Simberg, 2015). For simplicity, the participants recruited through museums are referred to as museum guides (MG) and participants recruited via The Federation of Finnish Tourist Guide Associations or the closed Facebook-group are referred to as tour guides (TG), although the tour guides also reported that they guided in museums. Data was also collected from MGs' work environments (museum exhibition areas) using the VEAW created by Sala et al. (2009).

2.1 The recruiting process

For the recruitment of TGs, e-mail addresses from 87 different local tour guide associations were retrieved from the website of The Federation of Finnish Tourist Guide Associations (sve. *Finlands guideförbund rf.*). The chairpersons of the local tour guide associations were contacted via e-mail and asked to forward the recruiting letter (Appendix A) and the questionnaire link to the members of the tour guide association. The recruiting letter described the purpose of the study and stated the participants' anonymity. The recruitment letter and the questionnaire were sent in both Finnish and Swedish. The Federation of Finnish Tourist Guide Associations currently represents 89 local tour guide associations all over Finland, with about 1350 authorized guides as members (Finlands

guideförbund rf., 2019). Additionally, the questionnaire was shared via a closed Facebook group with over 400 guides as members. The questionnaire for the TGs was open for six and a half weeks and a reminder e-mail (Appendix B) was sent two weeks prior to closing of the questionnaire.

Voice ergonomic risk factors in the exhibition areas of seven museums were assessed using the VEAW. The museums were contacted via e-mail for participation in the study, and the management gave their informed written consent for participation in the study. For the recruitment of the MGs, the participating museums forwarded another version of the questionnaire and information about the study to the MGs guiding in the museums in question. The participants were informed about the purpose of the study and anonymity, and the questionnaire link was sent in both Finnish and Swedish. In order to connect the questionnaire answers to the results in the voice ergonomic assessment of the MGs' work environment, parallel questionnaires were sent to all seven museums. The questionnaire for the MGs was open for two weeks and a reminder e-mail was sent one week prior to closing of the questionnaire.

2.2 The questionnaire

The data was collected with an online three-part questionnaire (Appendix C) directed towards TGs and MGs active in Finland. The questionnaire sent to the MGs was identical to the questionnaire sent to the TGs, although some questions were added (Appendix D). Prior to data collection, the questionnaire was piloted to a group of speech therapists and people who had previously worked as guides. The questionnaire was then revised based on comments from the groups. The questionnaire consisted of 42 questions, which were either open ended or multiple-choice questions. Question and page skip logic was applied, which meant that additional questions showed up for some respondents depending on the response option they chose earlier. The first part of the questionnaire consisted of questions about the background of the participants, such as sex, age, work experience, employment, frequency of guided tours per week and health-related questions. Health-related questions included questions about previous diagnosed voice disorders and risk factors for developing voice disorders such as smoking, heartburn, inhalant allergy and asthma. In the second part of the questionnaire, participants were asked guiding-related questions, such as the average length of a guided tour, the size of the audience, voice use while guiding, use of voice amplifiers and experienced stress. The last part of the questionnaire consisted of Screen11 (Table 1).

2.3 Assessment of voice ergonomic risk factors in museums

Ten different museums were contacted via e-mail and asked to participate in the study, and seven of the museums approved. The museums were chosen based on convenience sampling. The participating museums included both historical buildings and modern buildings that varied considerably in size. For assessment of the voice ergonomic risk factors in museums, the VEAW was used. The VEAW consists of five risk factor fields, but only three risk factor fields were assessed in this thesis (noise, indoor air quality and amplifier as aid), since assessment of the other risk factor fields requires interviewing and observing the employee. Information about the use of voice amplification was retrieved from the questionnaire answers. In the VEAW, stress belongs to the risk field of working culture, but in this study a question about perceived stress was included in the questionnaire, and the association between stress and vocal symptoms was thus not included in the risk factor fields applied from the VEAW, as in the study by Rantala et al. (2012).

Table 1

Screen 11

Symptoms	Occurrence			
	Never	Seldom	Every week	Every day
1. The voice becomes strained				
2. The voice tires				
3. The voice becomes hoarse				
4. The voice becomes low while speaking				
5. The voice breaks while speaking				
6. Difficulty in being heard				
7. A need for throat clearing while speaking				
8. A need for coughing while speaking				
9. A sensation of tension in the larynx region				
10. A sensation of lump in the throat				
11. A sensation of pain in the larynx region				

Note. The questionnaire was translated from Finnish to English by the author of this thesis.

For convenience, only museum exhibition areas were assessed since MGs mainly work in these areas, and it was unclear if the MGs used other areas of the museum. Assessment was carried out both by measuring and observing the exhibition areas on a weekday, within the opening hours of the museums. All assessments were carried out within a three-week period in October. For museums with several exhibition areas, observations and measurements were made in two of the exhibition areas. Measurements of background noise were conducted with a handheld sound level meter ET-933 class 2 approximately 1.5 m from the ground. Since reverberation time could not be measured, only a distinction between exhibition areas with or without audible reverberation could be made. All but one museum had visitors while the assessments of voice ergonomic risk factors were carried out, but no sound level measurements were conducted during guided tours. Unless otherwise stated, ambient noise also included activity noise. The museums' indoor temperature, humidity and levels of carbon dioxide were measured with Rotronic SW21 approximately 1.1 meters from the ground level. Relative humidity levels below 25%, carbon dioxide concentrations over 1000 ppm, and indoor air temperatures below 20 degrees Celsius or over 23 degrees Celsius was considered a risk factor for vocal health, in accordance with Sala et al. (2009) and the Finnish classification of indoor environment and material emissions (2008). For a complete list of risk factor fields and their subgroups applied from the VEAW, see Table 2. If a factor carried a risk for voice disorder, it was scored one, otherwise a value of zero was given (no risk).

2.4 Statistical analysis

The data was analyzed using IBM SPSS Statistics for Windows, version 25.0.

Independent samples t-tests were used to analyze group differences between TGs and MGs. Cross tabulations were used to perform bivariate analyses between selected variables. Additionally, correlation analyses were conducted between some variables. Not all participants answered all the questions, and participants who did not reply to a question were excluded from the calculations. Hence, the number of participants varies in the results. Twelve participants had not answered all the questions in Screen11 and were therefore excluded from all calculations regarding the prevalence of vocal symptoms. One participant reported that she had not guided for the last year and four persons had misinterpreted the question about guiding frequency and were therefore excluded from the analyses regarding guiding frequency. Ordinal data were ranked in order to perform parametric tests.

Table 2

Risk Factor Fields and Their Subgroups that Were Assessed

Risk factor fields
Noise
Clearly audible noise from heating, plumbing, drains, ventilation, and lamps
Clearly audible noise from overhead/data projector, television, and other devices
Clearly audible noise from traffic, yard, adjacent rooms, hall and somewhere else
Audible reverberation
Indoor air quality
Room temperature other than 20-23 °C
Dust in air/on surfaces, interior decor in rooms, and articles difficult to clean
Unpleasant odor and signs of water damage
Stuffy air and draught
Dry indoor air
Amplifier as an aid
No access to a sound amplifier
A need for a sound amplifier

Note. The risk factors were applied from the VEAW

The prevalence of the different vocal symptoms was coded into two groups so that symptoms that occurred weekly or daily formed a category called *frequently occurring vocal symptoms* and symptoms that occurred seldom or never formed a category called *seldom or never occurring vocal symptoms*. These variables were used based on previous studies where similar symptoms have been investigated (Fellman & Simberg, 2016; Hagelberg & Simberg, 2015; Sala et al., 2001; Simberg et al., 2005; Simberg et al., 2009). A voice disorder was defined as four or more frequently occurring vocal symptoms, as this has previously been determined to be the optimal cutoff score for a voice disorder in Screen11 (Zenger, 2019).

The participants were asked whether they had another occupation alongside guiding and those who responded affirmatively were asked about their occupation. These participants were classified into two categories so that those who had voice-demanding occupations alongside guiding formed a category called *vocally demanding main occupation*, and those who had less vocally demanding occupations alongside guiding formed a category called *less vocally demanding main occupation*. Participants over the age of 65 were excluded

from this classification. The classification was based on previous research on occupations and voice use (Titze, Lemke, & Montequin., 1997; Vilkmán, 2000).

2.5 Participants

Altogether 199 answers were collected including 161 answers from the TGs and 38 answers from the MGs. Four answers were excluded because they were duplicates and one answer was excluded since it was blank. In total, 156 TGs (80.4%) and 38 MGs (19.6%) operating in Finland participated in the study. Of the participants, 88.1% ($n = 171$) answered the questionnaire in Finnish and 11.9% ($n = 23$) answered the questionnaire in Swedish.

Of the TGs, 85.3% ($n = 133$) were women, 14.1% ($n = 22$) were men, and one participant chose not to answer the question. Of the MGs, 71.1% ($n = 27$) were women, 26.3% ($n = 10$) were men, and one participant identified as “other”. The age of the TGs ranged from 32 to 83 years ($M = 60.2$, $SD = 10.4$), and the age of the MGs ranged from 23 to 65 years ($M = 33.5$, $SD = 9.77$). An independent-samples t-test indicated that age was significantly higher for TGs than for MGs, $t(181) = 13.9$, $p < .001$. Most of the TGs had over 10 years of guiding experience (53.2%, $n = 83$), while most of the MGs had worked as guides for ten years or less (52.6%, $n = 82$). An independent samples t-test comparing the TGs and MGs guiding experience indicated that TGs ($M = 4.25$, $SD = 2.45$) had significantly more guiding experience than MGs ($M = 2.39$, $SD = 1.42$), $t(97.38) = 6.12$, $p < 0.001$. For a more comprehensive report on the participants experience working as guides, see Table 3.

Table 3

Work Experience as Guides (N = 194)

Experience in years	Tour guides	Museum guides
	<i>n</i> (%)	<i>n</i> (%)
12 months or less	9 (5.8)	3 (7.9)
1–2 years	12 (7.7)	8 (21.1)
3–5 years	17 (10.9)	11 (28.9)
6–10 years	35 (22.4)	6 (15.8)
11–15 years	18 (11.5)	7 (18.4)
16–20 years	11 (7.1)	3 (7.9)
21–25 years	16 (10.3)	-
26–30 years	18 (11.5)	-
31–40 years	17 (10.9)	-
Over 40 years	3 (1.9)	-

3.Results

The results are presented in four parts: voice use related to guiding, prevalence of vocal symptoms in TGs and MGs, risk factors associated with a voice disorder, and assessment of the voice ergonomic risk factors in museums.

3.1 Voice use related to guiding

Only a few of the participants reported that they guided on average more than 10 hours per week, while most of the TGs (54.3%, $n = 82$) estimated guiding one hour or less per week for the last year, and half of the MGs (50%, $n = 19$) estimated that they guided on average two to five hours per week. An independent samples t-test comparing the TGs and MGs average hours guiding per week revealed that MGs ($M = 1.61$, $SD = 1.88$) guided significantly more hours per week than TGs ($M = 0.89$, $SD = 1.60$), $t(187) = -2.38$, $p = 0.018$. See Table 4 for an overview of how much participants guided per week on average.

Table 4

How Many Hours Per Week Participants Guided On Average (N = 189)

	Tour guides	Museum guides
	<i>n</i> (%)	<i>n</i> (%)
1 hours or less	82 (54.3)	8 (21.1)
2–5 hours	46 (30.5)	19 (50.0)
6–10 hours	11 (7.3)	4 (10.5)
11–15 hours	3 (2.0)	3 (7.9)
16–20 hours	2 (1.3)	-
21–25 hours	1 (0.7)	2 (5.3)
26–30 hours	2 (1.3)	1 (2.6)
31–35 hours	1 (0.7)	-
36–40 hours	2 (1.3)	-
41 hours or more	1 (0.7)	1 (2.6)

The most common places to guide included busses ($n = 130$, 67%), walking tours in cities ($n = 124$, 63.9%) and indoor museums ($n = 117$, 60.3%). Since many of the MGs ($n = 14$) also guided in other places except museums, they were also included in these calculations. See Table 5. for a presentation of the locations where participants guided. Most TGs ($n = 125$, 80.1%) and MGs ($n = 36$, 94.7%) reported that they guided on average between less than one hour to two hours straight and had an audience that usually consisted of between

11 and 30 persons. For further information on the length of guided tours and the size of the audience, see Tables 6 and 7.

Table 5

Locations Where Participants Reported That They Have Guided in (N = 194)

Locations were participants guided	<i>n</i>	%
Museums (indoors)	117	60.3
Open-air museums	38	19.6
Busses	130	67
Walking tours in cities	124	63.9
In nature	60	30.9
Historical buildings	93	47.9
Other places	38	19.6

Note. Other places were commonly boats, botanical gardens, cemeteries, churches, and mines. *n* = number of answers, % = relative percentage of *n*.

Table 6

Reported Length of a Guided Tour on Average (N = 194)

Length	TGs	MGs
	<i>n</i> (%)	<i>n</i> (%)
1 hour or less	25 (16)	19 (50)
2 hours	100 (64.1)	17 (44.7)
3 hours	15 (9.6)	2 (5.3)
4 hours or more	16 (10.3)	-

Table 7

Number of Persons in the Audience on Average (N = 193)

Size of audience	TGs	MGs
	<i>n</i> (%)	<i>n</i> (%)
4 persons or less	1 (0.6)	-
5–10 persons	6 (3.8)	2 (5.3)
11–20 persons	38 (24.4)	19 (50)
21–30 persons	65 (41.7)	15 (39.5)
31–40 persons	27 (17.3)	2 (5.3)
41 persons or more	18 (11.5)	-

Almost all the TGs had received vocational training in guiding ($n = 153$, 98.1%), while only 15.8% ($n = 6$) of the MGs had received vocational training in guiding. The length of the training included everything between a single course in guiding to a three-year long BA. with guiding as major. Only three participants (1.5%) had wilderness guide training, while 80 participants (41.2%) had a vocational degree in guiding (*sve. yrkesexamen för guider*).

Of the participants, 64.4% ($n = 125$) answered that they had another occupation or studied alongside guiding. Of these participants, 39.2% ($n = 49$) had a vocally demanding occupation alongside guiding, 58.4% ($n = 73$) had a less vocally demanding occupation alongside guiding, and 2.4% ($n = 3$) did not state their occupation and could therefore not be categorized. Of the participants who had another occupation alongside guiding, 57.6% ($n = 72$) reported that they were working full time, meaning that they worked about forty hours a week. Of the participants, 19.2% ($n = 24$) had a part-time occupation of about thirty hours a week, 7.2% of the participants ($n = 9$) had a part-time occupation of about twenty hours a week, and 14.4% of the participants ($n = 18$) had a part-time occupation of about ten hours or less a week. Of the participants, 17.5% ($n = 34$) answered that they had a vocally demanding hobby such as choir singing or acting.

Over half of the participants (59.7%, $n = 116$) experienced difficulties in making their voice heard to a varying extent when guiding, while a vast majority of the guides (92.3%, $n = 179$) answered that they increased their vocal loudness when guiding. Of the participants, 77.3% ($n = 150$) reported that their voice got strained while guiding, although the extent of how often the voice became strained varied. See Table 8 for a thorough report of these results. Of these participants, about half (50.7%, $n = 76$) reported that their voice recovered in about one hour or less when it became strained, 32% of the participants ($n = 48$) reported that their voice recovered in a few hours, 14.7% of the participants ($n = 22$) reported that their voice recovered overnight, and three participants (2%) reported that their voice recovered within a few days after it became strained.

Participants were asked whether they had been absent from guiding tasks because of voice problems unrelated to flu for the past year. Three participants (1.6 %) reported that they had been absent from guiding tasks for 1–2 days, and one participant (0.5 %) reported being absent for 1–2 weeks for the past year. In total, 97.9 % of the participants ($n = 189$) reported that they had not been absent from guiding tasks because of voice problems for the past year.

Table 8

Voice Use When Guiding (N = 193–194)

	Difficulties in making voice heard	Using a louder voice	Strained voice
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Never, about 0% of the times	78 (40.3)	14 (7.7)	44 (22.7)
Seldom, about 25% of the times	96 (49.5)	57 (29.4)	85 (43.8)
Sometimes, about 50% of the times	16 (8.2)	57 (29.4)	47 (24.2)
Often, about 75% of the time	3 (1.5)	47 (24.2)	17 (8.8)
Always, about 100% of the times	1 (0.5)	18 (9.3)	1 (0.5)

There was a significant difference in access to voice amplifiers (VA) between TGs ($M = 2.17$, $SD = 1.39$) and MGs ($M = 1.0$, $SD = 1.58$), $t(188) = 4.53$, $p < 0.001$. On average, TGs reported that they had access to a VA about half of the times they guided, while MGs reported that they had access to a VA about a quarter of the times they guided. Of the participants who had reported that they never had access to a VA when guiding, 38.8% ($n = 19$) reported that they would like to use a VA about a quarter of the times when guiding, and 10.2% ($n = 5$) reported that they would like to use a VA about half of the times when guiding, while 49% ($n = 24$) reported that they never wanted to use a VA. There was no difference between TGs and MGs in how often VAs were used when guiding. Only a few participants (5.7%, $n = 8$) reported that they never used a VA even though they had access to it, while 38.6% ($n = 54$) reported that they always used one when they had access to it. For a more comprehensive report on the participants' access to and use of VAs, see Table 9. Of the participants who used a VA, 19.2% ($n = 25$) reported that they used both a handheld VA and a headset, 46.2% ($n = 60$) used a handheld device, and 34.6% ($n = 45$) used a headset. The most common reason for choosing not to use a voice amplifier was that the participants felt it was unnecessary. See Table 10 for reasons the guides did not use VAs when guiding.

Table 9

Participants' Access to and Use of a Voice Amplifier

Frequency	Access to voice amplifier ($N = 190$)		Use of voice amplifier ($N = 140$)
	TGs	MGs	All guides
	n (%)	n (%)	n (%)
Never, about 0% of the time	25 (16.4)	24 (63.2)	8 (5.7)
Seldom, about 25% of the times	28 (18.4)	5 (13.2)	30 (21.3)
Sometimes, about 50% of the times	26 (17.1)	1 (2.6)	15 (10.6)
Often, about 75% of the times	42 (27.6)	1 (2.6)	33 (23.4)
Always, about 100% of the times	31 (20.4)	7 (18.4)	54 (38.3)

Table 10

Reasons for Not Using a Voice Amplifier ($N = 76$)

Reasons for not using a voice amplifier	n	%
It is uncomfortable	13	9.7
It does not look good	2	1.5
It is unreliable or broken	7	5.2
It takes time to put it on	5	3.7
It sounds unnatural	10	7.5
It feels unnatural	13	9.7
It is bothersome	11	8.2
It is difficult to use	4	3
The batteries are empty	5	3.7
It is unnecessary	33	24.6
Other reasons*	31	23.1

Note. Participants could choose multiple reasons for not using a VA, n = number of answers, % = relative percentage of n . **Other reasons* for not using a VA were related to the functioning of the VA, such as feedback; a small audience; an unsuitable environment (e.g. cemeteries); not needing a VA because of a naturally full throated voice; VAs not being available at all times; and price.

Over half of the participants (51.5%, $n = 100$) thought that they did not have sufficient information about voice care. Of the guides who had a vocational training, 68.6% ($n = 109$) had received guidance in voice use during their training, while 17.6% ($n = 28$) had not

received guidance in voice use during vocational training, and 13.8% ($n = 22$) did not remember whether they had received guidance in voice use. See Table 11 for information on the amount of guidance in voice use participants reported receiving via their vocational training. Additionally, 38.1% ($n = 74$) of the participants reported that they had received guidance in voice use outside of the vocational training. These participants had usually received guidance in voice use through their employer ($n = 14$), via courses arranged by The Federation of Finnish Tourist Guide Associations ($n = 15$) or via courses in voice use they had attended independently ($n = 9$). Some of the participants had also received guidance in voice use through their main job ($n = 8$), whilst six of the participants reported that they had received guidance in voice use from a speech language pathologist. Of the TGs, 12.8 % ($n = 20$) and of the MGs, 52.6 % ($n = 20$) had neither received guidance in voice use during vocational training, nor later in their guiding career.

Table 11

Amount of Guidance in Voice Use as Part of the Vocational Training

	<i>n (%)</i>
4 hours or less	87 (79.8)
5–10 hours	15 (7.7)
11 hours or more	7 (3.6)

3.2 Vocal symptoms among guides

The prevalence of four or more frequently occurring vocal symptoms among guides ($N = 182$) was 11% ($n = 20$), while 20.9% of guides experienced one to three frequently occurring symptoms ($n = 38$). For TGs the frequency of four frequently occurring vocal symptoms was 10.8% ($n = 16$), while 19.6% ($n = 29$) experienced one to three frequently occurring symptoms. Of the MGs 11.8% ($n = 4$) experienced 4 or more frequently occurring vocal symptoms and 26.5% ($n = 9$) experienced one to three frequently occurring vocal symptoms. Female participants had on average more frequently occurring vocal symptoms ($M = 1.01$, $SD = 1.96$) than male participants ($M = 0.69$, $SD = 1.58$), however, the difference was not significant, $t(178) = 0.839$, $p = 0.403$. An independent samples t-test indicated that the difference in the number of frequently occurring vocal symptoms between TGs ($M = 0.96$, $SD = 1.98$) and MGs ($M = 0.94$, $SD = 1.50$) was not significant, $t(180) = 0.051$, $p = 0.960$. The most common symptoms were *A need for throat clearing while speaking*, reported by 13.7% ($n = 25$); *The voice becomes hoarse*, reported by 13.2% ($n = 24$); and *The voice becomes*

strained, reported by 12.1% ($n = 22$) of the participants. See Table 12 for an overview of the frequency of the eleven vocal symptoms in guides.

Table 12

Frequency of 11 Vocal Symptoms in Guides (N=182)

	Frequently occurring symptoms	Seldom or never occurring symptoms
	<i>n</i> (%)	<i>n</i> (%)
The voice becomes strained	22 (12.1)	160 (87.9)
The voice tires	19 (10.4)	163 (89.6)
The voice becomes hoarse	24 (13.2)	158 (86.8)
The voice becomes low while speaking	17 (9.3)	165 (90.7)
The voice breaks while speaking	3 (1.6)	179 (98.4)
Difficulty in being heard	13 (7.1)	169 (92.9)
A need for throat clearing while speaking	25 (13.7)	157 (86.3)
A need for coughing while speaking	17 (9.3)	165 (90.7)
A sensation of tension in the larynx region	19 (10.4)	163 (89.6)
A sensation of lump in the throat	11 (6)	171 (94)
A sensation of pain in the larynx region	4 (2.2)	178 (97.8)

Of the participants, 17% ($n = 33$) reported they had voice problems at present and 13.4% of the participants ($n = 26$) had previously sought help from health-care professionals because of their voice problems. A voice problem was defined as e.g. difficulties in being heard or having throat pain without flu symptoms. In total, 4.1% ($n = 8$) of the participants had been diagnosed with a voice disorder by a physician. Four of these participants had received voice therapy for their voice disorder. Using the Fisher's exact test, four or more frequently occurring vocal symptoms had a significant association with reported voice problems, $p < 0.001$. Of the participants who thought they had voice problems, 34.4% ($n = 11$) had four or more frequently occurring vocal symptoms, while 5.9% ($n = 8$) of those participants who reported that they did not think they have voice problems had four or more frequently occurring vocal symptoms.

There was no significant difference in the prevalence of frequently occurring vocal symptoms between guides with a vocally demanding main occupation and guides with a vocally less demanding main occupation. Altogether 14.3% ($n = 6$) of those who had a

vocally demanding main occupation alongside guiding had four or more frequently occurring vocal symptoms, 14.6% ($n = 7$) of the participants who had a less vocally demanding main occupation alongside guiding had four or more frequently occurring vocal symptoms, and 9.1% ($n = 2$) of the participants who did not have another occupation outside guiding had four or more frequently occurring vocal symptoms. For a more comprehensive report on the topic, see Table 13.

Table 13

Prevalence of Vocal Symptoms in Participants with Vocally Demanding Main Occupation Alongside Guiding, Vocally Less Demanding Main Occupation Alongside Guiding and Participants Without Main Occupation Alongside Guiding (N = 112)

	No symptoms <i>n</i> (%)	One to three symptoms <i>n</i> (%)	Four or more symptoms <i>n</i> (%)
Vocally demanding occupation alongside guiding ($n = 42$)	26 (61.9)	10 (23.8)	6 (14.3)
Less vocally demanding occupation alongside guiding ($n = 48$)	28 (58.3)	13 (27.1)	7 (14.6)
Guiding as main occupation ($n = 22$)	17 (77.3)	3 (13.6)	2 (9.1)

Note. Participants over the age of 65 were excluded from the calculations.

A bivariate correlation analysis was conducted to investigate whether the number of hours per week the participants guided had a connection with the number of frequently occurring vocal symptoms. The correlation analysis indicated that there was no significant association between the number of hours a participant guided per week and frequently occurring vocal symptoms. Since almost half of the participants ($n = 90$, 47.6%) had answered that they guided one hour or less per week, and many participants had commented in the free commentaries that they guided only irregularly and much less than one hour per week, a second correlation analysis was conducted after excluding participants who guided one hour per week or less. The included participants ($N = 91$) guided on average at least two hours per week up to forty-one hours or more. The bivariate correlation analysis indicated that the number of hours a participant guided per week had a positive correlation with small to moderate effect with the number of frequently occurring vocal symptoms, $r = 0.205$, $p = 0.025$. The participants' ($N = 171$) age did not have a significant correlation with the number of frequently occurring vocal symptoms, $r = -0.61$, $p = 0.425$.

Of the participants, 52.6% ($n = 102$) reported that their vocal symptoms never

affected their guiding and 41.8% ($n = 81$) reported that their vocal symptoms affected their guiding seldom, about a quarter of the times they guided. Eight participants (4.1%) reported that it affected their guiding about half the times, two participants (1%) reported that they did not experience any vocal symptoms and one participant (0.5%) reported that her vocal symptoms always affected her guiding. When asked whether the vocal symptoms affected their mood, 46.4% ($n = 90$) of the participants reported that it never affected their mood, 20.1% ($n = 39$) reported that it affected their mood a little, 6.2% ($n = 12$) reported that their mood was moderately affected by their vocal symptoms, one participant (0.5%) reported that her mood was notably affected by vocal symptoms and another participant (0.5%) left the question blank. Of the participants, 26.3% ($n = 51$) reported that they did not have any vocal symptoms.

3.3 Risk factors for vocal symptoms

3.3.1 Health related risk factors

The most common health-related risk factor for voice disorders was chronic rhinitis, occurring in 32.5% of the participants ($n = 63$) for the last twelve months. The association between chronic rhinitis and frequently occurring vocal symptoms was significant, $\chi^2 [2] = 14.849$, $p = 0.001$, with a medium effect (Cramer's $V = 0.29$, $p = 0.001$). Of the participants, 13.4% ($n = 26$) reported having diagnosed asthma. Of those participants, 53.8% ($n = 14$) used medication for their asthma daily, one participant (3.8%) used medication weekly and 30.8% ($n = 8$) of the participants used medication more seldom or whenever necessary, and 11.5% ($n = 3$) never used medication for asthma. The association between asthma and frequently occurring vocal symptoms was significant, $\chi^2 [2] = 13.752$, $p = 0.001$, with a medium effect size (Cramer's $V = 0.28$, $p = 0.001$). Of the participants, 26.8% ($n = 52$) reported having a respiratory allergy but respiratory allergy did not have a significant association with frequently occurring vocal symptoms.

Altogether 8.8% of the participants ($n = 17$) reported experiencing heartburn weekly, one participant (0.5%) reported experiencing heartburn daily, 55.2% ($n = 107$) reported experiencing heartburn more seldom, while 35.6% ($n = 69$) never experienced heartburn. Heartburn did not have a significant association with frequently occurring vocal symptoms. Most of the participants were non-smokers, while 6.2% ($n = 12$) reported smoking monthly or more seldom, 2.5% ($n = 5$) smoked weekly and 2.5% ($n = 5$) of the participants smoked daily. In total 11.4% ($n = 22$) smoked to some extent, but smoking did not have a

significant association with frequently occurring vocal symptoms. See Table 14 for the relationship between health-related risk factors and vocal symptoms.

3.3.2 Psycho-emotional risk factors

Of the participants, 7.3% ($n = 14$) experienced quite a lot of stress, and 2.6% ($n = 5$) felt very much stressed, 26.2% ($n = 50$) reported some stress, and 37.2% ($n = 71$) reported only a little stress. Altogether 26.7% ($n = 51$) of the participants reported no stress. A one tailed bivariate correlation analysis showed that there was a moderate positive correlation between frequently occurring vocal symptoms and experienced stress, $r = 0.28$, $p < 0.001$, accounting for 7.84% of the variation in the number of frequently occurring vocal symptoms, $R^2 = 0.0784$.

3.3.3 Environmental risk factors

Participants were asked to answer questions about the environments they guided in. Since 47.6% of the participants ($n = 90$) had answered that they guided one hour or less per week, and the answers to the questions regarding the environmental factors ranged from daily to never, these participants were excluded from the analysis. Altogether 90 participants were included in the analysis, of which 68.9% ($n = 62$) were TGs and 31.1% ($n = 28$) were MGs. The most common environmental risk factors occurring weekly or more often were *guiding in reverberating environments*, reported by 16.4% ($n = 10$) of TGs and 60.7% ($n = 17$) of MGs, and *guiding in environments with disturbing background noise*, reported by 17.7% ($n = 11$) of TGs and 63% ($n = 17$) of MGs. See Table 15 for further information on the prevalence of reported environmental factors in the guiding environment. No significant associations were observed between the reported environmental risk factors and four or more frequently occurring vocal symptoms among TGs and MGs.

Table 14

Relationship Between Health-Related Risk Factors and Vocal Symptoms

Health Related Risk Factor	No symptoms <i>n</i> (%)	One to three symptoms <i>n</i> (%)	Four or more symptoms <i>n</i> (%)	χ^2
Asthma (<i>n</i> = 25)	9 (36)	10 (40)	6 (24)	$\chi^2 [2] = 13.75, p = 0.001$
Respiratory allergy (<i>n</i> = 49)	28 (57.1)	15 (30.6)	6 (12.2)	NS
Chronic rhinitis (<i>n</i> = 60)	32 (53.3)	14 (23.3)	14 (23.3)	$\chi^2 [2] = 14.85, p = 0.001$
Hearthburn weekly or more often (<i>n</i> = 17)	8 (47.1)	5 (29.4)	4 (23.5)	NS
Smoking weekly or more (<i>n</i> = 9)	6 (66.7)	1 (11.1)	2 (22.2)	NS

Note. NS = Not significant.

Table 15

Reported Prevalence of Environmental Factors in the Guiding Environment Divided into Categories Weekly or More Often and More Seldom or Never

	Tour guides ($N = 57-62$)		Museum guides ($N = 27-28$)	
	weekly or more often n (%)	seldom or never n (%)	weekly or more often n (%)	seldom or never n (%)
guiding in reverberating environments	10 (16.4)	51 (83.6)	17 (60.7)	11 (39.3)
guiding in environments where voice feels muffled	4 (7)	53 (93)	2 (7.1)	26 (92.9)
guiding in environments where air feels dry	5 (8.5)	54 (91.5)	8 (28.6)	20 (71.4)
guiding in environments where it feels drafty	10 (17)	49 (83)	5 (17.9)	23 (82.1)
guiding in environments where the air quality is poor	9 (14.8)	52 (85.2)	7 (25)	21 (75)
guiding in environments with disturbing background noise	11 (17.7)	51 (82.3)	17 (63)	10 (37)

3.4 Museum guides' voice ergonomic risk factors

Voice ergonomic risk factors were found in every museum. All museums ($N = 7$) had risk factors in the field of noise, while four museums (57.1%) also had risk factors in the field of indoor air quality. Voice amplifiers were accessible in only two museums (28.6%), so five of the observed museums (71.4%) also had risk factors in the field of voice amplifiers. The most common risk factors were noise-related such as audible reverberation and clearly audible noise from adjacent rooms or other places. Audible reverberation was observed in all except two museums. Risk factors in the field of indoor air quality was mostly related to interior decor in rooms and articles difficult to clean. Only one museum had relative humidity levels below the recommended 25%, and all museums had indoor room temperature and levels of carbon dioxide in accordance with the recommendations. See Table 16 for voice ergonomic risk factors in museums, in the risk factor fields of noise, indoor air quality and amplifier as aid.

Table 16

Voice ergonomic risk factors in museums ($N = 7$)

Risk factor fields	<i>n</i> (%)
Noise	7 (100)
Clearly audible noise from heating, plumbing, drains, ventilation, and lamps	1 (14.3)
Clearly audible noise from overhead/data projector, television, and other devices	4 (57.1)
Clearly audible noise from traffic, yard, adjacent rooms, hall and somewhere else	7 (100)
Audible reverberation	5 (71.4)
Indoor air quality	4 (57.1)
Room temperature other than 20-23 °C	0
Dust in air/on surfaces, interior decor in rooms, and articles difficult to clean	3 (42.9)
Unpleasant odor and signs of water damage	1 (14.3)
Stuffy air and draught	1 (14.3)
Dry indoor air	1 (14.3)
No access to a sound amplifier *	5 (71.4)

Note. *n* = number of museums with the risk factor in question. * The risk factor *a need for a voice amplifier* was not included in these calculations, since the reported answers varied within the same museums.

An independent samples t-test was conducted in order to investigate whether frequently occurring vocal symptoms were more common in museums with more voice

ergonomic risk factors. Of the MGs, 35.1% ($n = 13$) had guided in other environments besides the assessed museum for the past year, while 64.9% ($n = 24$) had only guided in the assessed museums. One participant reported not guiding in the assessed museum for the last year and were therefore excluded from the calculations. Four participants had not answered every question in Screen 11 and were therefore excluded from the calculations regarding vocal symptoms. To conduct the analysis, the variables noise, indoor air quality and amplifier as aid were divided into two groups which were *museum with low background noise* and *museum with high background noise*; *museums with adequate indoor air quality* and *museums with inadequate indoor air quality*; and *museums with access to a voice amplifier* and *museums without access to a voice amplifier*. The cutoff point was determined using the median split, so that the museums with four or more points in the field of noise were categorized as museums with high background noise. The same procedure was conducted for the other risk factor fields. The cutoff score was zero for indoor air quality, one for amplifier as aid and six for the risk factor fields in total.

MGs who guided in museums with more risk factors in total had on average more frequently occurring vocal symptoms ($M = 1.05$, $SD = 1.58$) than MGs that guided in museums with less vocal risk factors ($M = 0.79$, $SD = 1.48$), however, the difference was not significant ($t(31) = -0.493$, $p = 0.626$). The difference between the groups of noise, indoor air quality and amplifier as aid was also not significant. The analysis was also made excluding MGs who guided in other places except the assessed museums, but these results were also not significant. Of the MGs, 65.8% ($n = 25$) reported that they also guided outdoors. Voice use outside was not part of the VEAW, but as it is considered a vocal risk factor, the group difference between MGs who guided outdoors and MGs who did not guide outdoors was also investigated regarding frequently occurring vocal symptoms. The results were, however, not significant.

Ambient noise levels were measured from four different points in one exhibition area or room, and a mean value was calculated. All but two museums had ambient noise levels over 40 dBA. One museum had ambient noise levels over 60 dBA at the time of measurement. See Table 17 for mean values of ambient noise levels in museums at the time of measurement. The mean value for ambient noise levels in all seven museums was 48.8 dBA. Common contributors to ambient noise levels were noise due to human activity coming from adjacent rooms or the nearby café, video installations with high sound levels, audio enhancements of visual exhibits, and squeaky floors. Audible reverberation in varying extent

was observed in five museums. High ceilings, nonabsorbent surfaces, naked walls and large open spaces were observed to varying degrees in all five museums.

Table 17

Ambient Noise Levels in Museums (N = 7)

Museum	dBA	dBA _{max}
1	44.6	64.5
2	36.9	40.1
3	49.1	53.7
4	48.9	52.2
5	63.4	69.5
6	59.6	65.7
7	39.2	42.3

Note. The values are means from four points of measurement.

In one question, MGs were asked to estimate how far from the audience they usually stand while guiding, estimated from the person who stands the farthest away in the audience. Of the MGs, 39.5 % ($n = 15$) estimated this distance to be between two and four meters, 34.2 % ($n = 13$) estimated it to be between five and eight meters, four MGs (10.5%) reported that the distance varied considerably depending on the group, and 15.8% ($n = 6$) of the MGs gave varying estimations between 0.1 meters and 10 meters. In general, MGs reported that their voice became more strained when guiding for a larger group and for a younger audience. For a more comprehensive report on the topic, see Tables 18 and 19.

Table 18

How Strained MGs Reported that Their Voice Became According to Group Size (N = 37)

	Under 10 persons	10–20 persons	21–30 persons	31–40 persons	Over 40 persons
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Not at all	22 (59.5)	7 (18.9)	7 (18.9)	2 (5.4)	-
Only a little	11 (29.7)	21 (56.8)	9 (24.3)	6 (16.2)	6 (16.2)
Somewhat	4 (10.8)	6 (16.2)	13 (35.1)	10 (27)	7 (18.9)
Quite a lot	-	2 (5.4)	5 (13.5)	10 (27)	11 (29.7)
Very much	-	1 (2.7)	2 (5.4)	1 (2.7)	4 (10.8)
I do not guide for this group	-	-	1 (2.7)	8 (21.6)	9 (24.3)

Table 19

How Strained MGs Reported That Their Voice Became When Guiding for a Certain Group (N = 37 – 35)

	Under school aged children	Primary school children	Secondary school children	Adults
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Not at all	9(25)	4(10.8)	4(11.1)	7(20)
Only a little	13(36.1)	14(37.8)	16(44.4)	19(54.2)
Somewhat	8(22.2)	12(32.4)	12(33.3)	7(20)
Quite a lot	5(13.9)	4(10.8)	2(5.6)	1(2.9)
Very much	1(2.8)	3(8.1)	2(5.6)	1(2.9)

The MGs were also asked whether they have guided tours at the same time as there are other guided tours or other big groups (e.g. school groups) present in the exhibition area. Of the MGs, 10.5% ($n = 4$) reported that they have never guided at the same time as there is another guided tour in the area, 52.6% ($n = 20$) reported that they only have done it seldom, 34.2% ($n = 13$) reported that they have done it sometimes, and one participant (2.6%) reported that she has done it often. All but three MGs (7.9%) reported that they have guided tours at the same time as big groups are present in the exhibition areas. Of the MGs, 42.1% ($n = 16$) reported that they seldom have guided tours at the same time as there are big groups in the exhibition area, 42.1% ($n = 16$) reported that they often guided simultaneously as there were big groups in the same area, and three participants (7.9%) said they did this often.

4. Discussion

The purpose of this thesis was to determine the prevalence of vocal symptoms among guides in Finland and investigate the occurrence of possible vocal risk factors in museum guides' work environment through a voice ergonomic assessment tool. The vocal symptoms in the thesis were retrieved from Screen11, and four or more frequently occurring vocal symptoms was considered a voice disorder. Possible risk factors for the vocal symptoms were also investigated.

4.1 Vocal symptoms among guides

The prevalence of voice disorders among guides ($N = 182$) was 11%, while 20.9% reported experiencing one to three frequently occurring vocal symptoms. For TGs, the prevalence of a

voice disorder was 10.8% and for MGs 11.8%. This was the first study in which Screen11, an updated version of Screen6, was used to determine the prevalence of voice disorders in a group of occupational voice users. The prevalence of voice disorders in TGs is contrary to a previous study in which the reported prevalence of a voice disorder in French TGs was reported as 21.3% (Sanssené et al., in press). The prevalence is likewise low compared to studies where the prevalence of voice disorders among different occupational voice users was investigated using Screen6 (Table 20). This might partly be explained by the different setup of the questions in Screen6 and Screen11, as almost all question in Screen6 consist of multiple symptoms, while each question in Screen11 includes only one vocal symptom. The setup of the questions in Screen6 might affect the specificity of the screening tool. For example, the prevalence of a voice disorder among Finnish teachers was reported to be as high as 54% using a variation of Screen6 (Vertanen-Greis, Löyttyniemi, & Uitti, in press). Considering Verdolini and Ramings (2001) estimation that about 3–9% of the general population has a voice disorder at any given moment, the prevalence of voice disorders among the guides is still higher compared to the general population. Since data regarding the prevalence of voice disorders in a Finnish general population is lacking, it is hard to determine if the prevalence of voice disorders among guides exceeds the prevalence in the Finnish general population. The results might have been affected by the fact that most of the participants were women, since voice disorders are more common among women compared to men (Cohen et al., 2012; Lyberg-Åhlander et al., 2018; Roy et al., 2005).

The results in this thesis are comparable at least in part to the results regarding French TGs (Sanssené et al., in press) where VHI-10 scores were used to determine the prevalence of voice disorders, since Screen11 has been shown to correlate strongly with VHI scores (Zenger, 2019). Still, VHI might be more suitable for individuals with voice problems, as the statements in VHI are phrased assuming that the individual has voice complaints, while screening tools like Screen11 are geared towards a general population, with the aim to identify individuals with a voice disorder from their vocally healthy counterparts. Another probable explanation for the difference in the prevalence of voice disorders among French TGs and TGs in Finland can be the guiding frequency. France is currently the leading tourist destination in the world with almost 90 million tourist arrivals in 2018, while the equivalent number for Finland in 2018 was 3.2 million tourist arrivals (World Tourism Organization, 2019). It can therefore be assumed that French TGs guide much more frequently than Finnish TGs and, consequently, more demands are placed on their voices. Over half of the TGs

(54.3%) in Finland reported that they guided on average only one hour per week or less, and many wrote in the free commentaries that they guided only occasionally and far less than one hour per week. When only including participants who guided at least two hours per week up to over 41 hours per week, guiding frequency had a positive correlation with the number of frequently occurring vocal symptoms. Sanssené et al. (in press) found that the use of a high intensity voice for more than six hours per week correlated with a pathological score in VHI-10, and the use of a prolonged voice (more than 31 hours per week) was associated with aphonia in French TGs. Similarly, Roy et al. (2005) found an association between the frequency and duration of specific vocal behaviors such as talking, talking loudly, coughing and throat clearing, and the reporting of voice disorders. It is possible that there is an upper cutoff point for voice use after which the duration and frequency of voice use might become pathological. Titze (1994) argues that vocal fold tissue injury can occur in a predisposed individual if a critical vibration dose is exceeded. The vibration dose is calculated using the metrics amplitude, frequency and duration. Furthermore, it is presumed that vibration overdose contributes to cycles of vocal fold tissue injury and repair and subsequent voice mutation (Titze, 1994). Still, the exact amount of vibration dose that may pose a risk for developing a voice disorder is yet to be discovered.

Table 20

Prevalence of Voice Disorders in Different Occupational Groups Using Screen6

	Study	N	Prevalence of voice disorders
Soccer coaches	Fellman & Simberg (2017)	109	28.4%
Priests	Hagelberg & Simberg (2015)	901	26.7%
Teacher students	Ohlsson et al. (2005)	319	14%
Teachers	Simberg et al. (2005)	241	20%

Note. A voice disorder was considered if the participant had two or more frequently occurring vocal symptoms out of a total of six.

Even though voice disorders are more prevalent in elderly populations (Cohen et al., 2012; Gregory et al., 2012) this was not observed among the participants in this study, since age did not correlate with the number of frequently occurring vocal symptoms. This finding is, however, consistent with that of Sanssené et al. (in press) who reported that the older TGs had a lower prevalence of voice disorders compared to their younger counterparts. It is likely that many TGs who have experienced voice problems may have retired from the

business earlier and are therefore not included in the sample. Experience might also have helped the TGs to manage their voice better. Surprisingly, the prevalence of frequently occurring vocal symptoms was not higher among guides who had a vocally demanding main occupation versus guides who had a vocally less demanding main occupation, and the result is thus contrary to previous studies comparing voice symptoms in participants with vocally demanding occupations and less vocally demanding occupations (Fellman & Simberg, 2017; Roy et al., 2004). The discrepancy could be attributed to the individuals with vocally demanding main occupations who already have some voice complaints opting not to guide, as guiding in Finland is mainly a secondary source of income. Since the guiding profession sets high demands on voice use, it is possible that some individuals with poorer prerequisites for voice use opt not to guide or discontinue their guiding career because of voice complaints and are therefore not included in the sample.

Interestingly, there was an apparent difference in the amount of voice guidance Finnish TGs and French TGs had received. Of the Finnish TGs, 87.2% had received guidance in voice use either as part of their vocational training, or elsewhere, while the corresponding result for French TGs was reported to be 34.3% (Sanssené et al., in press). However, compared to the Finnish TGs, only 47.4% ($n = 18$) of the Finnish MGs who participated in the study had received guidance in voice use. Most of the participants had received guidance in voice use for four hours or less, and 51.5% of the participants thought that their knowledge in voice use was not sufficient. Vocal hygiene training has been reported to improve the vocal health of teachers (Pasa, Oates, & Dacakis, 2007), and could therefore presumably also benefit the guides' vocal health.

4.2 Risk factors for voice disorders among guides

Frequently occurring vocal symptoms among guides was significantly associated with the health-related risk factors asthma and chronic rhinitis. Of the participants, 13.4% reported having diagnosed asthma, which is in line with the reported prevalence rate for the adult Finnish population (Terveyden ja hyvinvoinnin laitos, 2019b). Over half of the participants with asthma reported using medications for it. As in previous studies (Hagelberg & Simberg, 2015; Roy et al., 2004) asthma had a significant association with vocal symptoms. Inhaled corticosteroids, which are commonly used in the treatment of asthma, also pose a risk factor for developing a voice disorder (Ihre, Zetterstrom, & Hammarberg, 2004). Still, the most common health-related risk factor was chronic rhinitis, reported by 32.5% of the participants. This finding is consistent with the reported prevalence rate for chronic rhinitis for the adult

Finnish population (Terveyden ja hyvinvoinnin laitos, 2019a). The results are likewise comparable to studies where a significant association between chronic rhinitis and voice disorders was reported (Fellman & Simberg, 2017; Hagelberg & Simberg, 2015; Simberg et al., 2005). Since the climate is quite cold in Finland and most of the participants reported guiding outdoors, it is possible that colds are common, since the cold weather makes the individuals more susceptible to viral infections (Mäkinen et al., 2008). Frequent colds are in turn a factor that increase the odds of reporting of a chronic voice disorder (Roy et al., 2005).

Stress had a significant correlation with the number of frequently occurring vocal symptoms, which is in accordance with previous studies investigating the association between stress and vocal symptoms (Holmqvist, Santtila, Lindström, Sala, & Simberg, 2013). The most common environmental risk factors reported in this study were reverberation, disturbing background noise, and draft, but none of these had a significant association with reported voice symptoms. The results are in line with that of Sanssené et al. (in press), who reported that the main environmental factor associated with increasing vocal intensity in French TGs is background noise near the place of the visit.

Of the MGs, 63.2% reported that they never had access to a voice amplifier, while only 16.4 % of TGs reported never having access to a voice amplifier. The difference in access to VAs can be due to a limited number of MGs in the study compared to the large number of TGs included in the study. It is also possible that many TGs have access to voice amplifiers via their local tour guide association, while MGs might not be members of any local guide association and must rely on their employer in terms of access to voice amplification. It is also possible that voice amplification is not seen as necessary when guiding indoors in museums. Still, many benefits in using voice amplification have been reported, such as reducing vocal loading (Gaskill, O'Brien, & Tinter, 2012; Morrow & Connor, 2011) in teachers and increasing listeners speech perception in classrooms (Mendel, Roberts, & Walton; 2003). It is likely that voice amplification could benefit guides and participants of guided tours as well.

4.3 Voice ergonomic risk factors in museums

In this thesis, a systematic voice ergonomic assessment tool, *the VEAW* was used for the first time in museums. The assessment revealed that the voice ergonomic risk factors were mostly related to noise, but a significant association between the risk factors and frequently occurring vocal symptoms among MGs was not found. This could be due to a limited sample size, since only seven museums were included in the study. Moreover, the lack of optimal assessment

tools for work environments such as museums might have affected the data collection.

The most common noise related risk factors were audible reverberation and noise from adjacent rooms due to human activity, audio enhancements and video installations. The average ambient noise level for the museums was 48.8 dBA, and the noise levels ranged between 36.9 dBA and 63.4 dBA. The reported noise level is considerably lower than noise levels for establishments such as day care centers (Södersten et al., 2002), restaurants (Zemke et al., 2011), and school classrooms (Sala & Rantala, 2016), but higher than in university classrooms (Hodgson, Rempel, & Kennedy, 1999). Since the noise level measurements were conducted in museums outside peak seasons, it is likely that noise levels are considerably higher in museums during peak seasons such as summer holidays. Still, five out of seven museums had background noise levels exceeding 40 dBA, which is the minimum noise level at which the Lombard effect occurs (van Heusden et al., 1979). For good speech intelligibility, the speech sound level is required to be at least 15 dBA louder than the background noise (Sala et al., 2009). For some groups of people, such as the elderly, children, individuals with impaired hearing, individuals with language impairments, and non-native speakers, the speech sound level is required to be as much as 24 dBA louder than the background noise for good speech intelligibility (Sala et al., 2009).

In their research paper, Carvalho, Gonçalves, & Garcia (2013) compared the acoustics of an old and a modern museum. The researchers conducted background noise measurements both with and without museum visitors in the exhibition area, and reported that background noise levels increased between 16 and 33 dBA with visitors in the museums. In this thesis, background noise was measured both with and without visitors for only one museum, and in this museum the noise levels increased with almost 15 dBA with visitors. Carvalho et al. (2013) recommends that the background noise levels including heating, ventilation and air conditioning does not exceed 45 dBA in exhibition areas and recommends reverberation time to be between 0.8 and 1.4 seconds. The researchers found that only one exhibition room out of in total six of the assessed exhibition rooms had a reverberation time that was close to the recommendations, and reverberation times in the modern museum varied between 3.8 and 4.1 seconds (Carvalho et al., 2013). Even though reverberation time could not be measured in this study, audible reverberation was observed in five out of seven museums. High reverberation affects speech intelligibility and increases the background noise levels, resulting in guides having to use a louder voice and listeners having a more difficult time comprehending the information provided by the guides. Using a louder voice can be

detrimental to the vocal health because of the mechanical stress the vocal folds are subjected to during loud voice use (Titze, 1994).

According to Carvalho et al. (2013) the acoustic environments in modern museums have suffered because of the characteristics of the architecture in recent years, preferring smooth surfaces, high ceilings, large spans, and the use of nonabsorbent materials such as stone and glazed ceramic. This is in accordance with the observations of the participating museums, since some of the museums had the beforementioned characteristics. Compared to modern museums, historic building used as museums have their own challenges, since acoustic features of the exhibition rooms are often neglected in order to preserve the building (Carvalho et al., 2013).

4.4 Limitations of the study and suggestions for future research

The study included a large sample of TGs and can therefore be assumed to be representative of Finnish tour guides. The number of MGs in the study was limited, and the sample is therefore not likely to be representative of museum guides working in Finland. Because of the online questionnaire methodology, a participation bias cannot be avoided, and it is likely that individuals with voice complaints were more likely to participate in the study than individuals without voice complaints.

The assessment of voice ergonomic risk factors in museums had some limitations. The assessment was conducted using VEAW, but since the VEAW was mainly developed for use in classrooms or office spaces, it had to be adjusted in order to be suitable to the museums' exhibition areas. A considerable part of the voice ergonomic assessment relied on the researcher's observations, making it more susceptible to bias. In addition to decreasing bias, the use of more quantitative measurements would have enabled a better differentiation of museums with more versus less voice ergonomic risk factors, resulting in more reliable data. An example of this is reverberation time. Even though the researcher observed that the amount of reverberation in two different reverberating areas differed considerably, reverberation time could not be quantified because of lack of equipment, and hence only a distinction between exhibition areas with perceived reverberation and with no perceived reverberation could be made. For the ambient noise level measurements to be more reliable, measurements of average noise levels could have been done in a longer time frame. A limited sample size is likely to also have affected the results, possibly hindering uncovering an association between voice ergonomic risk factors and vocal symptoms.

The questionnaire also suffered some limitations. Some of the questions

included were not optimized for the target population, such as the question about the frequency of guiding. Since most of the guides guided for one hour per week or much less, and some participants commented that they only guided occasionally or seasonally, it would have been relevant to include a question on how regularly participants guided, as well as an open question where guides would have been able to explain their guiding frequency.

Research on voice use among guides is still scarce, and further work is required to investigate the risk factors associated with voice disorders among guides. There is a strong rationale for further investigations on how environmental risk factors affect vocal health, as this could serve as a guideline for adjustments in the workplace environment, potentially preventing work-related voice disorders. It seems that guides in Finland have less frequently occurring vocal symptoms compared to individuals in other vocally demanding occupations. It would be interesting to investigate the cause of this discrepancy by, for example, comparing voice knowledge and vocal function between guides and other occupational voice users. Furthermore, it would be interesting to explore to what extent and how the frequency of voice use among occupational voice users affect their vocal health, and investigate if there is a certain vocal dose after which the risk for voice use becoming pathological increases. This could enable health care professionals to establish some recommendations on the maximum recommended vocal dose per week for some occupations. Furthermore, it would be interesting to investigate how peak seasons affect the guides voice use and vocal health, as this research project was conducted outside peak season. In terms of factors such as guiding frequency, vocational education and access to voice amplification, there seems to be a discrepancy between TGs and MGs, and it would be interesting to investigate MGs voice use and vocal behavior further, as the participation of MGs was limited in this study.

4.5 Conclusion

The aim of the present thesis was to investigate the prevalence of vocal symptoms among guides in Finland and explore possible risk factors associated with frequently occurring vocal symptoms. Additionally, the aim was to explore some environmental risk factors in MGs work environment. The results of the thesis indicate that voice disorders are quite common in guides, occurring in 11% of the participants. The risk factors asthma, chronic rhinitis and perceived stress had a significant relationship with the number of frequently occurring vocal symptoms, suggesting that individuals with these risk factors are more susceptible to voice disorders. Voice ergonomic risk factors were observed in all participating museums, and the most common risk factors were noise-related such as audible reverberation and clearly

audible noise from adjacent rooms or other places.

The results in this thesis imply that while guides do face challenges in voice use and are susceptible to specific environmental factors such as loud background noise and reverberation, the prevalence of vocal symptoms seems to be lower among guides compared to other occupational voice users such as teachers (Simberg et al., 2005) and priests (Hagelberg & Simberg, 2015). This may be due to both methodological differences in the research and to the frequency of voice use and knowledge in voice care, as many guides had received guidance in voice use during their vocational training. Still, it is advisable that guides especially susceptible to health-related and environmental risk factors consider preventative voice ergonomic measures. In environments with voice ergonomic risk factors especially related to noise present, vocal symptoms could be prevented with the use of voice amplification, since voice amplification decreases the intensity of the voice. Preventative voice ergonomic measures in the workplace could therefore include providing guides with proper voice amplifiers when needed, as well as information about voice use and care. Furthermore, investigating the relationship between environmental risk factors and voice disorders could lead to better voice ergonomic measures in the workplace, potentially resulting in a decrease in occupational voice disorders. This thesis has provided an insight into voice use and vocal symptoms among Finnish guides, as well as information about common voice ergonomic risk factors among guides' work environment.

Swedish summary – Svensk sammanfattning

Röstsymptom bland finländska guider: Prevalens och möjliga riskfaktorer

Inledning

Rösten bildas genom ett komplicerat samspel av andning, fonation och artikulation. Vid röstbildning bygger luftströmmen från utandningen upp det subglottala trycket, som i sin tur får stämbanden att vibrera. Ljudvågorna förstärks sedan i det supraglottala kaviteterna (för en översikt, se till exempel Boone, McFarlane, Von Berg & Zraik, 2013). Då detta samspel rubbas kan en röststörning uppkomma (Hammarberg m.fl., 2008). American Speech-Language-Hearing Association definierar en röststörning som tillståndet då en person uttrycker oro över att hens röst är onormal och rösten inte håller för de dagliga kraven som ställs på den (American Speech-Language-Hearing Association [ASHA], 1993). En välfungerande röst är ett nödvändigt arbetsredskap för ungefär en tredjedel av arbetskraften (Vilkman, 2004). Till röstkrävande yrken hör bland annat lärare, telefonoperatörer, präster, jurister och guider (Titze, 1997; Williams & Carding, 2005). Röststörningar är vanligare bland personer i röstkrävande yrken (Verdolin & Ramig, 2001), inte enbart på grund av krav på långvarig röst användning, men också på grund av förekomsten av riskfaktorer i arbetsmiljön, såsom inadekvat rumsakustik och avsaknad av röstförstärkning (Vilkman, 2000).

Trots att guider inkluderats i beskrivningar av yrken med höga krav på rösten (Williams & Carding, 2005) är forskning kring guiders röst användning knapp. Sanssené, Bardi & Welby-Gieusses (in press) studie om prevalensen av röststörningar bland franska guider är för tillfället, i min vetskap, den enda storskaliga publicerade studien om guiders röst användning. Enligt resultaten i studien är röststörningar bland guider mycket vanliga, och förekom hos 21,3 % av deltagarna. Författarna rapporterade också om specifika riskfaktorer för röststörningar, såsom bakgrundsbuller, temperaturförändringar, ryggsmärta, stress och användningen av en förhöjd röststyrka under mer än sex timmar per vecka (Sanssené m.fl., in press).Handledning i röst användning var sällsynt bland guiderna, och 65,7 % av de franska guiderna hade aldrig fått handledning i röst användning (Sanssené m.fl., in press). I denna avhandling undersöks förekomsten av röstsymptom bland guider verksamma i Finland samt förekomsten röstergonomiska riskfaktorer i guiders arbetsmiljö.

Metod

Den etiska nämnden vid Institutionen för psykologi och logopedi vid Åbo Akademi beviljade tillstånd för utförandet av studien. Materialet samlades in genom en webbenkät (Bilaga C) bestående av frågor om guiders bakgrund, hälsa, röst användning relaterat till guidning och förekomst av röstsymptom. För rekrytering av deltagare kontaktades ordföranden för 87 olika lokala guideförbund via mejl, och ombads distribuera vidare rekryteringsbrevet och länken till webbenkäten. Mailadresserna hämtades från Finlands guideförbunds rf:s hemsida. För tillfället representerar Finlands guideförbund rf. 89 olika lokala guideföreningar runt om Finland med ungefär 1350 auktoriserade guider som medlemmar (Finlands guideförbund rf., 2019). Webbenkäten delades också i en sluten Facebook-grupp med över 400 guider som medlemmar.

En bedömning av röstergonomiska riskfaktorer gjordes i sju olika museers utställningsområden med hjälp av handboken *Röstergonomisk bedömning av arbetsmiljön- Handbok i röstergonomisk utredning* (Sala m.fl., 2009). Museerna kontaktades via mejl med bekvämlighetsurval, och museiledningen gav sitt skriftliga samtycke för deltagandet i studien. Riskfaktorer inom områdena buller, inomhusluft och hjälpmedel undersöktes. Bullermätningarna utfördes med en decibelmätare (ET-933, klass 2) och inomhusluftens temperatur, luftfuktighet och koldioxidhalt mättes med en handhållen luftmätare (Rotronic SW21). Den röstergonomiska bedömningen av utställningsområdet innehöll också en kvalitativ observation av området. Museiledningen distribuerade en annan version av webbenkäten vidare till museiguider i de ifrågasvarande museerna. Webbenkäten som skickades till museiguider innehöll samma frågor som den ursprungliga enkäten, men den innehöll också tillägsfrågor (Bilaga D) riktade till museiguider. Alla deltagare gav sitt skriftliga samtycke till deltagandet i studien, och blev informerade om studiens syfte och att deltagandet var anonymt. För tydlighet kallas deltagare rekryterade via guideförbundet eller den slutna Facebook-gruppen för *guider* och deltagare rekryterade via museer kallas för *museiguider*, trots att deltagare rekryterade via guideförbundet eller Facebook-gruppen också angav att de guidade i museer.

Frågorna angående röstsymptom i webbenkäten hämtades från Screen11, ett screeningsverktyg som innehåller frågor om elva olika röstsymptom. Förekomsten av likadana röstsymptom har undersökts i tidigare studier där prevalensen av röststörningar bland olika yrkesgrupper undersökts (Fellman & Simberg, 2016; Hagelberg & Simberg, 2015; Ohlsson m.fl., 2015; Simberg, Sala, Vehmas & Laine, 2005; Simberg m.fl., 2009).

Förekomsten av röstsymptomen delades in i två olika grupper där röstsymptom som förekom veckovis eller oftare bildade en kategori kallad *ofta förekommande röstsymptom*, och röstsymptom som förekom sällan eller aldrig bildade en kategori kallad *sällan eller aldrig förekommande röstsymptom*. Denna indelning var baserad på tidigare studier där förekomsten av samma röstsymptom undersökts (Fellman & Simberg, 2016; Hagelberg & Simberg, 2015; Sala m.fl., 2001; Simberg m.fl., 2005; Simberg m.fl., 2009). Ett gränsvärde av fyra eller flera ofta förekommande röstsymptom definierades som en röststörning, i enlighet med resultaten i valideringen av Screen11 (Zenger, 2019).

Resultat

Sammanlagt 194 guider deltog i studien, varav 80,4 % ($n = 156$) var guider och 19,6 % ($n = 38$) museiguider. Av deltagarna var 82,5 % kvinnor och 16,5 % män. Elva procent av deltagarna hade fyra eller flera ofta förekommande röstsymptom, vilket i denna studie definierades som en röststörning. De vanligaste ofta förekommande röstsymptomen var *behovet av att harkla mig då jag pratar*, som förekom hos 13,7 % av deltagarna, *rösten blir hes*, som förekom hos 13,2 % av deltagarna, och *rösten blir ansträngd*, som förekom hos 12,1 % av deltagarna. Deltagarnas ålder hade inte ett samband med antalet röstsymptom ($r = -0,61$, $p = 0,425$). Inga signifikanta skillnader i förekomsten av röstsymptom observerades mellan guiderna och museiguiderna, men museiguiderna och guiderna skilde sig signifikant med avseende på andra egenskaper. Guiderna hade signifikant mera arbetserfarenhet ($t(97,38) = 6.12$, $p < 0,001$) än museiguiderna, medan museiguiderna angav att de guidade signifikant flera timmar per vecka jämfört med guiderna ($t(187) = -2.38$, $p = 0,018$). Nästan alla guider (98,1 %) hade någon form av guideutbildning, medan den motsvarande siffran för museiguider var 15,8 %. Av guiderna hade 12,8 % aldrig fått rösthandledning, medan 52,6 % av museiguiderna aldrig fått rösthandledning. Guiderna hade också oftare tillgång till röstförstärkning. I medeltal hade guiderna tillgång till röstförstärkning ungefär hälften av gångerna de guidade, medan museiguiderna hade tillgång till röstförstärkning endast en fjärdedel av gångerna de guidade. Skillnaden var signifikant ($t(188) = 4,53$, $p < 0,001$). I fem av sju museer hade museiguiderna aldrig tillgång till röstförstärkning. Då endast deltagare som guidat i medeltal minst två timmar per vecka under det senaste året beaktades, hade antal timmar en deltagare guidat per vecka ett signifikant samband med antalet ofta förekommande röstsymptom ($r = 0,205$, $p = 0,025$). Sjutton procent av deltagarna tyckte att de hade röstproblem för tillfället, medan över tretton procent av deltagarna tidigare hade sökt hjälp för

sina röstproblem av sjukvårdspersonalen. Fyra eller fler ofta förekommande röstsymptom hade ett signifikant samband med självrapporterade röstproblem (Fisher's exact test $p < 0,001$). Av de deltagare som rapporterade att de hade röstproblem hade 34,4 % fyra eller flera ofta förekommande röstsymptom, medan den motsvarande siffran var 5,9 % för deltagare som rapporterade att de inte hade röstproblem.

Det fanns ingen signifikant skillnad i förekomsten av röstsymptom mellan personer med en annan röstkrävande huvud- eller bisyssla vid sidan om guidning jämfört med personer med en mindre röstkrävande huvud- eller bisyssla vid sidan om guidning. Den vanligaste hälsorelaterade riskfaktorn för röststörning var långvarig snuva, vilket förekom hos 32,5 % av deltagare. Andra vanliga hälsorelaterade riskfaktorer var luftvägsallergi, som förekom hos 26,8 % av deltagare, och astma, som förekom hos 13,4 % av deltagare. Både långvarig snuva ($\chi^2 [2] = 14,849, p = 0,001$) och astma ($\chi^2 [2] = 13,752, p = 0,001$) hade ett signifikant samband med ofta förekommande röstsymptom. Upplevd stress hade också ett signifikant samband med antalet ofta förekommande röstsymptom ($r = 0,28, p < 0,001$).

De vanligaste arbetsmiljörelaterade riskfaktorerna var att guida i områden med eko och störande bakgrundsbuller. Totalt 16,4 % av guiderna rapporterade att de guidade i områden med eko varje vecka eller oftare, medan den motsvarande siffran var 60,7 % för museiguider, och 17,7 % av guiderna rapporterade att de guidade i områden med störande bakgrundsbuller varje vecka eller oftare, medan den motsvarande siffran för museiguider var 60,7 %. Inga arbetsmiljörelaterade riskfaktorer hade ett signifikant samband med antalet oftare förekommande röstsymptom.

Röstergonomiska riskfaktorer observerades i alla sju museer. De vanligaste riskfaktorerna var relaterade till buller, såsom tydligt buller från angränsade rum eller andra platser, som observerades i alla museer, och eko, som observerades i fem olika museer. Museiguider som guidade i museer med flera riskfaktorer hade i medeltal ett högre antal ofta förekommande röstsymptom jämfört med museiguider som guidade i museer med färre riskfaktorer, men skillnaden var inte signifikant ($t(31) = -0,493, p = 0,626$). Fem av museerna hade bakgrundsbuller som översteg 40 dBA, och ett av museerna hade bakgrundsbuller som översteg 60 dBA under mättidpunkten. Medelbullernivån för de sju olika museerna var 48,8 dBA. De vanligaste bidragande faktorerna till bakgrundsbullret var mänsklig aktivitet från angränsade rum eller museets café, videoinstallationer med hög volym, ljud effekter och knarrande golv.

Diskussion

Elva procent av alla deltagare hade fyra eller flera ofta förekommande röstsymptom, vilket definierats som en röststörning i denna studie. Prevalensen av röststörningar bland guider i Finland är betydligt lägre jämfört med prevalensen av röststörningar bland franska guider, som rapporterats vara 21,3 % (Sanssené m.fl., in press). Prevalensen är också låg jämfört med resultaten av studier där prevalensen av röststörningar i röstkrävande yrken såsom lärare (Simberg m.fl., 2005), präster (Hagelberg & Simberg, 2015) och fotbollstränare (Fellman & Simberg, 2017) undersökts med likadana röstsymptom. Röstsymptomen i dessa studier inkluderade till skillnad från Screen11 dubbla påståenden, vilket möjligen påverkat resultaten. Prevalensen av röststörningar verkar trots det vara högre bland guider i Finland jämfört med prevalensen för den allmänna befolkningen, vilket uppskattas vara 3–9 % (Verdolini & Raming, 2001). En orsak till skillnaden i prevalensen av röststörningar mellan franska guider och guider i Finland kan bero på hur mycket deltagarna guidat. För tillfället är Frankrike världens populäraste turistmål (World Tourism Organization, 2019), vilket medför att efterfrågan på guidetjänster sannolikt är betydligt större i Frankrike jämfört med Finland, och guider i Frankrike sålunda använder sin röst längre tider än guider i Finland. Över hälften av deltagarna i denna studie rapporterade att de guidade i medeltal enbart en timme i veckan eller färre, och flera deltagare rapporterade dessutom att de guidade betydligt mindre än detta, och endast sporadiskt. Enligt resultaten i denna studie fanns det ett positivt samband mellan antal timmar deltagare guidade per vecka och antal ofta förekommande röstsymptom. Likartat rapporterade Sanssené med flera (in press) att användningen av en röst med hög intensitet i fler än sex timmar per vecka hade ett samband med patologiska värden i VHI-10, medan långvarig röst användning (fler än 31 timmar per vecka) hade ett samband med afoni. Därav är det möjligt att det finns ett gränsvärde för röst användning varefter röst användning kan bli patologiskt. Titze (1994) hävdar att vävnadsskada i stämbanden kan inträffa hos en predisponerad individ ifall en kritisk vibrationsdos överskrids, men den exakta vibrationsdosen som kan medföra risker för utvecklandet av en röststörning är ännu oklar.

Antal ofta förekommande röstsymptom var inte beroende av deltagarens ålder, vilket är i likhet med Sanssené med fleras (in press) resultat, men skiljer sig från tidigare studier där en högre ålder inneburit en högre prevalens av röststörningar (Cohen et al., 2012; Gregory, Chandran, Lurie & Sataloff, 2012). Detta kan bero på att guider som tidigare i sin karriär upplevt röstsymptom valt att avsluta sin karriär som guide på grund av röstproblemen, och är därav inte representerade i studiens sampel. Samma fenomen kan möjligen förklara

varför ofta förekommande röstsymptom inte var vanligare bland deltagare med en röstkrävande huvudsyssla jämfört med en mindre röstkrävande huvudsyssla. Eftersom guidandet i Finland främst fungerar som en sekundär inkomstkälla är det sannolikt att personer som tidigare upplevt röstsymptom valt att aldrig påbörja en karriär inom guidning.

De hälsorelaterade riskfaktorerna astma och långvarig snuva, samt stress, hade ett samband med ofta förekommande röstsymptom. Detta innebär att deltagare med dessa hälsoproblem löper en större risk att drabbas av en röststörning. De vanligaste arbetsrelaterade riskfaktorerna var att guida i områden med störande bakgrundsbuller, eko och drag, men inga arbetsrelaterade riskfaktorerna hade ett signifikant samband med ofta förekommande röstsymptom.

Resultaten av den röstergonomiska bedömningen av museernas utställningsområden visade att riskfaktorer relaterade till buller var betydligt vanligare än riskfaktorer relaterade till inomhusluftens kvalitet. Bullernivån i de sju olika museerna var i medeltal 48,8 dBA, och varierade mellan 36.9 dBA och 63.4 dBA. Bullernivåerna i museerna var betydligt lägre än bullernivåerna i till exempel daghem (Södersten m.fl., 2002), restauranger (Zemke, Hertzman, Raab & Singh, 2011) och klassrum (Sala & Rantala, 2016), men totalt fem av sju museer hade en bullernivå över 40 dBA. Lombardeffekten, det vill säga talarens ofrivilliga tendens att öka på röststyrkan för att förbättra hörbarheten på rösten, träder i kraft vid 40 dB (van Heusden, Plomp & Pols, 1979), och för god talförståelse krävs det dessutom att talaren pratar med en ljudnivå som överskrider bullret med minst 15 dBA (Sala m.fl., 2009). Bullermätningarna genomfördes under lågsäsong, och det är sannolikt att bullermängden i museerna är betydligt högre under högsäsong, såsom sommarmånaderna. Totalt 63,2 % av museiguiderna svarade att de aldrig hade tillgång till röstförstärkning. Användning av röstförstärkning kunde potentiellt minska på röstbelastningen (Gaskill, O'Brien & Tinter, 2012; Morrow & Connor, 2011) och förbättra talförståelsen (Mendel, Roberts & Walton; 2003), och således gagna både guiderna och publiken.

Resultaten i studien tyder på att medan röststörningar är vanligare bland guider jämfört med allmänna befolkningen, verkar prevalensen av röststörningar bland guider trots det vara mindre än i andra röstkrävande yrken, vilket möjligen kunde förklaras av mängden av röst användning samt handledning i röst användning, vilket majoriteten av deltagarna fått. Museiguiderna och guiderna skilde sig åt gällande flera faktorer, och det vore intressant att vidare undersöka röst användningen och förekomsten av röstergonomiska riskfaktorer hos museiguider, eftersom antalet museiguider var begränsad i denna studie. Studier gällande

guiders röstanvändning är fortfarande knapp, och flera studier behövs för att undersöka specifika riskfaktorer relaterade till arbetsmiljön hos guider. Information gällande hur arbetsrelaterade riskfaktorer påverkar rösten kunde fungera som en riktlinje vid planering av röstergonomiska åtgärder på arbetsplatsen, och således potentiellt minska på förekomsten av arbetsrelaterade röststörningar.

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Appendix A

The recruiting letter

HEI KAIKKI OPPAAT!

Nimeni on Nicole ja opiskelen logopediaa Åbo Akademiassa. Viime kesänä sain mahdollisuuden toimia oppaana ja jännittävän kesätyöni yhteydessä syntyi idea tutkia oppaiden äänenkäyttöä pro gradu-tutkielmassani. Tutkielman tarkoituksena on kartoittaa oppaiden äänenkäyttöä ja mahdollisia äänioireita.

Oppaat työskentelevät puheammattissa ja ääni onkin tärkeä työväline oppaille. Monien tutkimustulosten mukaan ääniongelmat ovat tavallisia puheammateissa työskentelevillä henkilöillä, mutta tietoa oppaiden tilanteesta ei tällä hetkellä ole. Tämän takia juuri SINUN osallistumisesi on tärkeää ja arvostettua! Antamalla noin 10 minuuttia ajastasi ja vastaamalla kyselyyn voit olla osallisena uudessa tutkimuksessa koskien oppaiden äänenkäyttöä. Sillä ei ole väliä, oletko ajatellut äänenkäyttöäsi aikaisemmin tai et, sillä KAIKKI vastaukset ovat yhtä tärkeitä!

Voit osallistua tutkimukseen vastaamalla kyselyyn oheisen linkin kautta.

Linkki suomenkieliseen kyselyyn:

<https://survey.abo.fi/lomakkeet/11721/lomake.html>

Mikäli sinulla on kysyttävää tutkielmastani, voit olla yhteydessä minuun!

Ystävällisin terveisin,
Nicole Cansu
Puheterapeuttiopiskelija
s-posti: ncansu@abo.fi

På svenska:

HEJ ALLA GUIDER!

Jag heter Nicole och studerar logopedi vid Åbo Akademi. Förra sommaren jobbade jag som guide, och fick i samband med mitt spännande sommarjobb idén att undersöka röst användningen hos guider för min pro gradu-avhandling. Syftet med avhandlingen är att kartlägga röst användningen och möjliga röstsymtom bland guider.

Rösten är ett viktigt arbetsredskap för guider och guiders arbetsuppgifter är ofta röstkrävande. Resultat från tidigare studier har visat att röstproblem är vanliga hos personer med röstkrävande yrken, men för tillfället saknas det kunskap om guiders situation. Därför är just DITT deltagande viktigt och uppskattat! Genom att ge ungefär 10 minuter av din tid och fylla i mitt frågeformulär kan du bidra till forskning om guiders röst användning på arbetsplatsen. Det spelar ingen roll ifall du inte tänkt på röst användning tidigare, för ALLA svar är viktiga!

Du kan delta i undersökningen genom att svara på frågeformuläret genom länken nedan.

Länk till svenskspråkigt frågeformulär:

<https://survey.abo.fi/lomakkeet/11721/lomake.html?rinnakkaislomake=svenska>

Ta gärna kontakt ifall du har frågor gällande undersökningen!

Med vänliga hälsningar,
Nicole Cansu
talterapeutstuderande
e-post: ncansu@abo.fi

Appendix B

The reminder e-mail

Hei taas kaikki oppaat!

Kyselyyni on vastannut jo 125 henkilöä, aivan mahtavaa! Paljon kiitoksia kaikille vastanneille, ilman teitä minulla ei olisi tuloksia. Haluan vielä muistuttaa teitä muista siitä, että vielä ehtii käydä vastaamassa kyselyyn oppaiden äänenkäytöstä. Kysely on auki 31.10 klo 23:55 saakka. Kyselyyn vastaaminen kestää noin 10–15 minuuttia ja vastaamalla olet osallisena uudessa tutkimuksessa koskien oppaiden äänenkäyttöä.

Tässä on linkki kyselyyn:

<https://survey.abo.fi/lomakkeet/11721/lomake.html>

Mukavaa loppusyksyä teille kaikille!

Ystävällisin terveisin

Logopedian opiskelija Nicole Cansu

Hej igen alla guider!

Redan 125 av er har svarat på mitt frågeformulär, fantastiskt! Tusen tack till alla som svarat, utan er skulle jag inte ha något material för slutarbetet. Dom av er som inte ännu svarat på mitt frågeformulär om guiders röst användning hinner ännu göra det fram till 31.10 kl. 23:55. De tar ungefär 10–15 minuter att svara på enkäten och genom att svara bidrar du till forskning om guiders röst användning.

Här är en länk till frågeformuläret:

<https://survey.abo.fi/lomakkeet/11721/lomake.html?rinnakkaislomake=svenska>

Trevlig höst till er alla!

Med vänliga hälsningar

Logopedistuderande Nicole Cansu

Appendix C

The questionnaire

KYSELY OPPAIDEN ÄÄNENKÄYTÖSTÄ

Hei!

Kiitos, kun päätit vastata kyselyyni! Kysely on tarkoitettu **Suomessa työskenteleville oppaille**, ja käsittelee äänenkäyttöä työpaikassa.

Kyselyyn vastaaminen kestää noin 10–15 minuuttia.

Kyselyyn vastataan nimettömänä, eikä yhteystietojasi tarvita siihen. Vastaukset käsitellään luottamuksellisesti, ja sekä käsitellään, että säilytetään EU:n yleisen tietosuojasetuksen (GDPR) ja Åbo Akademin tietosuojajohtajien mukaisesti.

Vastaathan mahdollisimman tarkasti.

Mikäli sinulla on kysyttävää, ota yhteyttä:

Puheterapeuttiopiskelija:

Nicole Cansu

Åbo Akademi

s-posti: ncansu@abo.fi

Ohjaaja:

Greta Wistbacka

FT, puheterapeutti, yliopisto-opettaja

Åbo Akademi

s-posti: greta.wistbacka@abo.fi

Suostumus tutkimukseen osallistumisesta

Annan suostumukseni osallistua kyseiseen tutkimukseen ja hyväksyn, että nimettömät vastaukseni käytetään opiskelijan pro gradu tutkielmassa ja tieteellisessä julkaisussa.

Taustatiedot

1. Sukupuoli

- Mies
- Nainen
- Muu
- En halua ilmoittaa

2. Ikä _____

3. Kuinka kauan olet toiminut oppaana?

- Alle 12 kuukautta
- 1–2 vuotta
- 3–5 vuotta
- 6–10 vuotta

- 11–15 vuotta
- 16–20 vuotta
- 21–25 vuotta
- 26–30 vuotta
- 31–40 vuotta
- Yli 40 vuotta

4. Arvioi kuinka monta tuntia viikossa olet keskimäärin opastanut viimeisen vuoden aikana

- 1 tunti tai vähemmän
- 2–5 tuntia
- 6–10 tuntia
- 11–15 tuntia
- 16–20 tuntia
- 21–25 tuntia
- 26–30 tuntia
- 31–35 tuntia
- 36–40 tuntia
- 41 tuntia tai enemmän
- En ole opastanut viimeisen vuoden aikana

5. Onko sinulla jokin muu pää- tai sivutoimi (kuten opiskelu tai työ) opastamisen ohella?

- Kyllä
- Ei

Mitä teet pää- tai sivutoimena? (voit kirjoittaa useita) _____

Arvioi pää- tai sivutoimesi laajuus:

- Kokoaikatyö, 100 %
- Osa-aikatyö, 75 %
- Osa-aikatyö, 50 %
- Osa-aikatyö, 25 % tai vähemmän

Arvioi kuinka monta tuntia päivittäin käytät ääntäsi pää- tai sivutoimessasi (HUOM! opastusta ei lasketa mukaan)

- 1 tunti tai vähemmän
- 2–3 tuntia
- 4–5 tuntia
- 6–7 tuntia
- 8 tuntia tai enemmän

Puhutko pää- tai sivutoimessasi

...Ulkona

- Päivittäin
- Viikoittain
- Harvoin
- En koskaan

...Meluisassa ympäristössä

- Päivittäin
- Viikoittain
- Harvoin
- En koskaan

...Isoille ryhmille

- Päivittäin
- Viikoittain
- Harvoin
- En koskaan

...Etäällä oleville kuulijoille

- Päivittäin
- Viikoittain
- Harvoin
- En koskaan

...Voimistetulla äänellä

- Päivittäin
- Viikoittain
- Harvoin
- En koskaan

6. Milloin viimeksi pidit opastuksen?

- Alle viikko sitten
- Kuukausi tai alle kuukausi sitten
- Yli kuukausi sitten

7. Millaisissa paikoissa opastat (voit valita useamman vastausvaihtoehdon)

- Museoissa (sisätiloissa)
- Ulkomuseoissa
- Linja-autoissa
- Kaupungilla (esim. kävelykerrokset)
- Luonnossa
- Historiallisissa rakennuksissa
- Jos opastat muissa paikoissa, missä? _____

8. Onko sinulla opaskoulutus?

- Kyllä
- Ei

Mikä koulutus?

- Matkaoppaan ammattitutkinto
- Luonto ja eräopaskoulutus
- Muu opaskoulutus, mikä? _____

Oletko saanut tietoa äänenkäytöstä (esim. ohjaus tai kurssi) **opaskoulutuksesi yhteydessä?**

- Kyllä
- En
- En osaa sanoa / En muista

Jos vastasit kyllä edelliseen kysymykseen, arvioi kuinka paljon

- 4 tuntia tai vähemmän
- 5–10 tuntia
- 11 tuntia tai enemmän

9. Oletko koskaan **opasurasi aikana** saanut tietoa äänenkäytöstä (esim. ohjausta tai jatkokoulutusta) **työntajalta tai muualta?**

- Kyllä
- En
- En osaa sanoa / En muista

Keneltä olet saanut tietoa äänenkäytöstä? _____

10. Tiedätkö mielestäsi tarpeeksi äänenhuollosta?

- Kyllä
- En
- En osaa sanoa

11. Onko sinulla mielestäsi tällä hetkellä ääniongelmiä?

- Kyllä
- Ei
- En osaa sanoa

12. Oletko koskaan hakenut apua ääniongelmiin?

- Kyllä
- En

Keneltä?

- Korva- nenä-, ja kurkkulääkäriltä
- Foniatriilta
- Työterveyslääkäriltä
- Terveyskeskuslääkäriltä
- Muualta, keneltä? _____

13. Onko lääkäri todennut sinulla äänihäiriön opasurasi aikana?

- Kyllä
- Ei

Tarkenna halutessasi _____

Minkälaisen äänihäiriön? _____

Oletko saanut puheterapiaa äänihäiriöön?

- En
- Kyllä, 4 tuntia tai vähemmän
- Kyllä, 5–10 tuntia

- Kyllä, 11 tuntia tai enemmän
14. Onko sinulla todettu astmaa?
- Kyllä
 - Ei
- Mikäli käytät astmalääkettä, kuinka usein käytät lääkettä?
- En käytä astmalääkkeitä
 - Päivittäin
 - Viikoittain
 - Harvoin/Tarvittaessa
- Mitä astmalääkettä käytät? _____
15. Onko sinulla todettu hengitystieallergiaa (esim. siitepölyallergia)?
- Kyllä
 - Ei
16. Onko sinulla viimeisen 12 kuukauden aikana esiintynyt toistuvaa tai pitkäaikaista nuhaa?
- Kyllä
 - Ei
17. Onko sinulla närästystä?
- Päivittäin
 - Viikoittain
 - Harvoin
 - Ei koskaan
18. Tupakoitko?
- Päivittäin
 - Viikoittain
 - Kuukausittain tai harvemmin
 - En koskaan
19. Onko sinulla ääntä vaativia vapaa-ajan harrastuksia (esim. kuorolaulu tai teatteri)?
- Kyllä, mitä _____
 - Ei

Työhön ja äänenkäyttöön liittyviä kysymyksiä

20. Arvioi kuinka kauan keskimäärin opastat kerralla
- 1 tunti tai vähemmän
 - 2 tuntia
 - 3 tuntia
 - 4 tuntia
 - 5 tuntia
 - 6 tuntia tai enemmän
21. Onko vaikea saada ääntäsi kuuluviin opastaessasi?
- Ei koskaan, noin 0 % ajasta
 - Harvoin, noin 25 % ajasta
 - Joskus, noin 50 % ajasta
 - Usein, noin 75 % ajasta

- Aina, noin 100 % ajasta
- En osaa sanoa

22. Kuinka iso yleisö sinulla on yleensä opastaessasi?

- 4 henkilöä tai vähemmän
- 5-10 henkilöä
- 11-20 henkilöä
- 21-30 henkilöä
- 31-40 henkilöä
- 41 henkilöä tai enemmän

23. Voimistatko ääntäsi opastuksien aikana?

- En koskaan, noin 0 % ajasta
- Harvoin, noin 25 % ajasta
- Joskus, noin 50 % ajasta
- Usein, noin 75 % ajasta
- Aina, noin 100 % ajasta
- En osaa sanoa

24. Oletko opastuksien jälkeen tuntenut, että ääni on rasittunut?

- En koskaan, noin 0 % ajasta
- Harvoin, noin 25 % ajasta
- Joskus, noin 50 % ajasta
- Usein, noin 75 % ajasta
- Aina, noin 100 % ajasta
- En osaa sanoa

Arvioi kuinka paljon aikaa äänesi palautumiseen menee

- Tunti tai vähemmän
- Muutama tunti
- Ääni palautuu yön yli
- Muutama päivä
- Viikko tai enemmän

25. Arvioi kuinka usein sinulla on mahdollisuus käyttää äänenvahvistinta (kuten mikrofonia tms.) opastaessasi

- Ei koskaan, noin 0 % ajasta
- Harvoin, noin 25 % ajasta
- Joskus, noin 50 % ajasta
- Usein, noin 75 % ajasta
- Aina, noin 100 % ajasta
- En osaa sanoa

Haluaisitko käyttää äänenvahvistinta opastaessasi?

- En koskaan, noin 0 % ajasta
- Harvoin, noin 25 % ajasta
- Joskus, noin 50 % ajasta
- Usein, noin 75 % ajasta

- Aina, noin 100 % ajasta

Kuinka usein käytät äänenvahvistinta opastaessasi (edellyttäen, että sinulla on mahdollisuus käyttää sitä)?

- En koskaan, noin 0 % ajasta
- Harvoin, noin 25 % ajasta
- Joskus, noin 50 % ajasta
- Usein, noin 75 % ajasta
- Aina, noin 100 % ajasta

Mikäli käytät äänenvahvistinta, minkälaista äänenvahvistinta käytät?

- Pääpantamikrofonia
- Kädessä pidettävää mikrofonia
- Muu, mikä? _____

Onko olemassa syitä, jonka vuoksi ET käytä äänenvahvistinta opastaessasi? (Voit valita usean vastausvaihtoehdon)

- Se on epämukava
- Se ei näytä hyvältä
- Se on epäluotettava tai rikki
- Sen asettamiseen menee aikaa
- Se kuulostaa epäluonnolliselta
- Se tuntuu epäluonnolliselta
- Se on häiritsevä
- Sitä on vaikea käyttää
- Paristot tyhjenevät
- Se ei ole tarpeellinen
- Muu syy, mikä? _____

26. Ota kantaa väittämiin:

Opastan tiloissa, joissa kaikuu

- Päivittäin
- Viikoittain
- Harvemmin
- En koskaan

Opastan tiloissa, joissa ääni tuntuu vaimennetulta

- Päivittäin
- Viikoittain
- Harvemmin
- En koskaan

Opastan tiloissa, joissa ilma tuntuu kuivalta

- Päivittäin
- Viikoittain
- Harvemmin

- En koskaan

Opastan tiloissa, joissa tuntuu vetoiselta

- Päivittäin
- Viikoittain
- Harvemmin
- En koskaan

Opastan tiloissa, joissa on huono ilmanlaatu (esim. pölyä tai hiekkaa)

- Päivittäin
- Viikoittain
- Harvemmin
- En koskaan

Opastan tiloissa, joissa on häiritsevää taustamelua

- Päivittäin
- Viikoittain
- Harvemmin
- En koskaan

27. Suositko jotain tietynlaista tilaa opastaessasi (minkälaisissa tiloissa sinusta on mukavinta puhua)?

28. Oletko viimeisen vuoden aikana ollut poissa opastuksista ääniongelmien takia, jotka eivät johtuneet flunssasta?

- En
- Kyllä, 1-2 päivää
- Kyllä, 3-6 päivää
- Kyllä, 1-2 viikkoa
- Kyllä, 3-4 viikkoa
- Kyllä, yli 4 viikkoa

29. Stressillä tarkoitetaan tilannetta, jossa ihminen tuntee itsensä jännittyneeksi, levottomaksi, hermostuneeksi tai ahdistuneeksi taikka hänen on vaikea nukkua asioiden vaivatessa jatkuvasti mieltä.

Tunnetko sinä nykyisin tällaista stressiä?

- En lainkaan
- Vain vähän
- Jonkin verran
- Melko paljon
- Erittäin paljon

Äänioireisiin liittyviä kysymyksiä

Kuinka usein sinulla on esiintynyt seuraavia oireita **viimeisen 12 kuukauden aikana?**

30. Ääni rasittuu

- Ei koskaan
- Harvoin
- Viikoittain
- Päivittäin

31. Ääni väsyä

- Ei koskaan
- Harvoin
- Viikoittain
- Päivittäin

32. Ääni käheytyy

- Ei koskaan
- Harvoin
- Viikoittain
- Päivittäin

33. Ääni madaltuu puhuessa

- Ei koskaan
- Harvoin
- Viikoittain
- Päivittäin

34. Ääni pettää puhuessa

- Ei koskaan
- Harvoin
- Viikoittain
- Päivittäin

35. Ääntä on vaikea saada kuuluviin

- Ei koskaan
- Harvoin
- Viikoittain
- Päivittäin

36. Puhuessa tulee tarve rykiä

- Ei koskaan
- Harvoin
- Viikoittain
- Päivittäin

37. Puhuessa tulee tarve yskiä

- Ei koskaan
- Harvoin
- Viikoittain
- Päivittäin

38. Kurkunpään seudulla tuntuu jännittyneisyyttä

- Ei koskaan
- Harvoin
- Viikoittain
- Päivittäin

39. Palan tunnetta kurkussa

- Ei koskaan
- Harvoin
- Viikoittain
- Päivittäin

40. Kurkunpään seudulla tuntuu kipua

- Ei koskaan
- Harvoin
- Viikoittain
- Päivittäin

41. Vaikuttavatko äänioireesi opastamiseen?

- Ei koskaan, noin 0 % ajasta
- Harvoin, noin 25 % ajasta
- Joskus, noin 50 % ajasta
- Usein, noin 75 % ajasta
- Aina, noin 100 % ajasta
- Minulla ei ole äänioireita

42. Vaikuttavatko äänioireet mielenalaasi?

- Huomattavasti
- Kohtalaisesti
- Vähän
- Ei lainkaan
- Minulla ei ole äänioireita

Tähän voit kirjoittaa mahdolliset kyselyä koskevat kommenttisi

TUHANNET KIITOKSET VASTAUKSISTASI!

FRÅGEFORMULÄR OM GUIDERS RÖSTANVÄNDNING

Hej!

Tack för att du valt att svara på mitt frågeformulär! Frågeformuläret är riktat till guider **verksamma i Finland**, och handlar om guiders röst användning på arbetet.

Det tar ungefär 10–15 minuter att svara på frågeformuläret. Du svarar helt anonymt och dina kontaktuppgifter behövs inte för ändamålet. Svaren behandlas konfidentiellt och hanteras och förvaras i enlighet med Åbo Akademis datasäkerhetsföreskrifter och General Data Protection Regulation, GDPR.

Var vänlig och svara så noggrant som möjligt.

Vid frågor kontakta:

Taltherapeutstuderande:
Nicole Cansu
Åbo Akademi
e-post: ncansu@abo.fi

Handledare:
Greta Wistbacka
FD, talterapeut, Universitetslärare i logopedi
Åbo Akademi
e-post: greta.wistbacka@abo.fi

Informerat samtycke

Jag samtycker till deltagande i föreliggande studie och godkänner att mina anonymiserade svar används i skribentens avhandling pro gradu samt i en vetenskaplig publikation.

Bakgrundsuppgifter

1. Kön
 - Man
 - Kvinna
 - Övrig
 - Vill inte uppge
2. Ålder (år) _____
3. Hur länge har du guidat?
 - Under 12 månader
 - 1–2 år
 - 3–5 år
 - 6–10 år
 - 11–15 år
 - 16–20 år
 - 21–25 år
 - 26–30 år
 - 31–40 år

- Över 40 år
4. Uppskatta hur många timmar i veckan du i medeltal guidat under det senaste året?
- 1 timme eller mindre
 - 2–5 timmar
 - 6–10 timmar
 - 11–15 timmar
 - 16–20 timmar
 - 21–25 timmar
 - 26–30 timmar
 - 31–35 timmar
 - 36–40 timmar
 - 41 timmar eller mer
 - Jag har inte guidat under det senaste året
5. Har du en annan huvud- eller bisyssla (såsom studier eller arbete) förutom att guida?
- Ja
 - Nej

Vad är din huvud- eller bisyssla? (Du kan ange flera svar) _____

Uppskatta vilken omfattning det är på din huvud- eller bisyssla?

- Heltid, 100 %
- Deltid, 75 %
- Deltid, 50 %
- Deltid, 25 % eller mindre

Uppskatta hur många timmar dagligen du pratar i din huvud- eller bisyssla (OBS Inte guidning)

- 1 h eller mindre
- 2–3 h
- 4–5 h
- 6–7 h
- 8 h eller mer

Pratar du i din huvud- eller bisyssla

...Utomhus

- Varje dag
- Varje vecka
- Mer sällan
- Aldrig

... I en bullrig miljö

- Varje dag
- Varje vecka
- Mer sällan
- Aldrig

... Inför stora grupper

- Varje dag
- Varje vecka
- Mer sällan
- Aldrig

... Inför en publik som är långt borta

- Varje dag
- Varje vecka
- Mer sällan
- Aldrig

... Med en förhöjd röststyrka

- Varje dag
- Varje vecka
- Mer sällan
- Aldrig

6. När har du senast guidat?

- Mindre än en vecka sedan
- En månad eller mindre än en månad sedan
- Över en månad sedan

7. I hurdana miljöer guidar du (du kan välja flera svarsalternativ)

- Museer (inomhus)
- Friluftsmuseer
- Bussar
- Städer (t.ex. rundvandring)
- Naturen
- Historiska byggnader
- Om du guidar i andra miljöer, vilka? _____

8. Har du en guideutbildning?

- Ja
- Nej

En hurdan utbildning?

- Yrkesexamen för guider
- Natur- och vildmarksguide
- Annan guideutbildning, vad? _____

Har du i **samband med din guideutbildning** fått information om röst användning (t.ex. handledning eller kurs)?

- Ja
- Nej
- Kan inte säga/Kommer inte ihåg

Om du svarat ja på föregående fråga, uppskatta hur mycket

- 4 timmar eller mindre
- 5–10 timmar
- 11 timmar eller mer

9. Har du nån gång **under din tid som guide** fått information om röst användning (t.ex. handledning eller utbildning) av en **arbetsgivare eller någon annan**?

- Ja
- Nej
- Kan inte säga/Kommer inte ihåg

Av vem har du fått information om röst användning? _____

10. Tycker du att du vet tillräckligt om hur du ska sköta om din röst?

- Ja
- Nej
- Kan inte avgöra

11. Tycker du att du för tillfället har röstproblem?

- Ja
- Nej
- Kan inte avgöra

12. Har du sökt hjälp för röstproblem?

- Ja
- Nej

Hos vem?

- Öron-, näsa-, och halsläkare
- Foniater
- Arbetshälsoläkare
- Hälsovårdcentralläkare
- Någon annan, vem? _____

13. Har en läkare konstaterat en röststörning hos dig under den tid som du arbetat som guide?

- Ja
- Nej

Kommentera vid behov _____

Hurdan röststörning? _____

Har du fått talterapi för röststörningen?

- Nej
- Ja, 4 timmar eller mindre
- Ja, 5-10 timmar
- Ja, 11 timmar eller mer

14. Har du diagnostiserad astma?

- Ja
- Nej

Ifall du använder astmamediciner, hur ofta använder du dem?

- Jag använder inte astmamediciner
- Varje dag
- Varje vecka
- Mer sällan/Vid behov

Vilken astmamedicin använder du? _____

15. Har du diagnostiserad luftvägsallergi (t.ex. pollenallergi)?
- Ja
 - Nej
16. Har du under de senaste 12 månaderna haft återkommande eller långvarig snuva?
- Ja
 - Nej
17. Har du halsbränna?
- Varje dag
 - Varje vecka
 - Sällan
 - Aldrig
18. Röker du?
- Varje dag
 - Varje vecka
 - Varje månad eller mer sällan
 - Aldrig
19. Har du röstkrävande fritidssysselsättningar (t.ex. körsång eller teater)?
- Ja, vad? _____
 - Nej

Frågor gällande arbetet och röst användningen

20. Uppskatta hur länge en guidning i medeltal varar
- 1 timme eller mindre
 - 2 timmar
 - 3 timmar
 - 4 timmar
 - 5 timmar
 - 6 timmar eller mer
21. Har du svårt att göra din röst hörd då du guidar?
- Aldrig, cirka 0 % av gångerna
 - Sällan, cirka 25 % av gångerna
 - Ibland, cirka 50 % av gångerna
 - Ofta, cirka 75 % av gångerna
 - Alltid, cirka 100 % av gångerna
 - Kan inte avgöra
22. Hur stor publik brukar du vanligtvis ha då du guidar?

- 4 personer eller färre
- 5-10 personer
- 11-20 personer
- 21-30 personer
- 31-40 personer
- 41 personer eller fler

23. Brukar du höja på din röststyrka då du guidar?

- Aldrig, cirka 0 % av gångerna
- Sällan, cirka 25 % av gångerna
- Ibland, cirka 50 % av gångerna
- Ofta, cirka 75 % av gångerna
- Alltid, cirka 100 % av gångerna
- Kan inte avgöra

24. Har du känt att rösten är ansträngd efter att du guidat?

- Aldrig, cirka 0 % av gångerna
- Sällan, cirka 25 % av gångerna
- Ibland, cirka 50 % av gångerna
- Ofta, cirka 75 % av gångerna
- Alltid, cirka 100 % av gångerna
- Kan inte avgöra

Uppskatta hur lång tid det tar innan du känner dig återställd i rösten

- En timme eller mindre
- Några timmar
- Rösten återhämtar sig under natten
- Några dagar
- En vecka eller mer

25. Uppskatta hur ofta du har tillgång till en röstförstärkare (t.ex. mikrofon eller dylikt) då du guidar

- Aldrig, cirka 0 % av gångerna
- Sällan, cirka 25 % av gångerna
- Ibland, cirka 50 % av gångerna
- Ofta, cirka 75 % av gångerna
- Alltid, cirka 100 % av gångerna
- Kan inte avgöra

Skulle du vilja ha en röstförstärkare då du guidar?

- Aldrig, cirka 0 % av gångerna
- Sällan, cirka 25 % av gångerna
- Ibland, cirka 50 % av gångerna
- Ofta, cirka 75 % av gångerna
- Alltid, cirka 100 % av gångerna

Hur ofta använder du en röstförstärkare då du guidar (förutsatt att du har tillgång till en)?

- Aldrig, cirka 0 % av gångerna
- Sällan, cirka 25 % av gångerna

- Ibland, cirka 50 % av gångerna
- Ofta, cirka 75 % av gångerna
- Alltid, cirka 100 % av gångerna

Ifall du använder en röstförstärkare, en hurdan röstförstärkare använder du?

- Huvudburen mikrofon
- Handhållen mikrofon
- Annat, vad? _____

Finns det orsaker till varför du INTE väljer att använda dig av en röstförstärkare då du guidar?

(Du kan välja flera svarsalternativ)

- Den är obekväm
- Den ser inte bra ut
- Den är opålitlig eller sönder
- Den tar tid att förbereda
- Den låter onaturlig
- Den känns onaturlig
- Den är distraherande
- Den är svår att använda
- Batteriet tar slut
- Den är inte nödvändig
- Annan orsak, vad? _____

26. Ta ställning till följande påståendn:

Jag guidar i utrymmen där det ekar

- Varje dag
- Varje vecka
- Mer sällan
- Aldrig

Jag guidar i utrymmen där rösten känns dämpad

- Varje dag
- Varje vecka
- Mer sällan
- Aldrig

Jag guidar i utrymmen där luften känns torr

- Varje dag
- Varje vecka
- Mer sällan
- Aldrig

Jag guidar i utrymmen där det känns dragigt

- Varje dag
- Varje vecka
- Mer sällan
- Aldrig

Jag guidar i utrymmen där luftkvaliteten är dålig (t.ex. förekomst av damm eller sand)

- Varje dag
- Varje vecka
- Mer sällan
- Aldrig

Jag guidar i utrymmen där det förekommer störande bakgrundsbuller

- Varje dag
- Varje vecka
- Mer sällan
- Aldrig

27. Föredrar du något särskilt utrymme då du guidar (i hurdana utrymmen känns det bekvämast att tala)?

28. Har du någon gång under det senaste året varit borta från guidningar på grund av röstproblem som inte orsakats av förkylning?

- Nej
- Ja, 1-2 dagar
- Ja, 3-6 dagar
- Ja, 1-2 veckor
- Ja, 3-4 veckor
- Ja, över 4 veckor

29. Med stress avses en situation där man känner sig spänd, rastlös, nervös, eller ångestfylld, eller har svårt att sova för att man oroar sig över något. **Om stress definieras på detta sätt, hur stressad känner du dig just nu?**

- Inte alls stressad
- Bara lite stressad
- Något stressad
- Ganska stressad
- Mycket stressad

Frågor gällande röstsymtom

Hur ofta har du **under de senaste 12 månaderna** haft följande symtom?

30. Rösten blir ansträngd

- Aldrig
- Sällan
- Varje vecka
- Varje dag

31. Rösten blir trött

- Aldrig
- Sällan
- Varje vecka
- Varje dag

32. Rösten blir hes

- Aldrig
 - Sällan
 - Varje vecka
 - Varje dag
33. Röstens blir låg då jag pratar
- Aldrig
 - Sällan
 - Varje vecka
 - Varje dag
34. Röstens sviker då jag pratar
- Aldrig
 - Sällan
 - Varje vecka
 - Varje dag
35. Svårt att göra min röst hörd
- Aldrig
 - Sällan
 - Varje vecka
 - Varje dag
36. Behov av att harkla mig då jag pratar
- Aldrig
 - Sällan
 - Varje vecka
 - Varje dag
37. Behov av att hosta då jag pratar
- Aldrig
 - Sällan
 - Varje vecka
 - Varje dag
38. En känsla av spänning i halsen
- Aldrig
 - Sällan
 - Varje vecka
 - Varje dag
39. En känsla av klump i halsen
- Aldrig
 - Sällan
 - Varje vecka
 - Varje dag
40. En känsla av smärta i halsen
- Aldrig
 - Sällan
 - Varje vecka
 - Varje dag

41. Inverkar dina röstsytom på guidningen?

- Aldrig, cirka 0 % av gångerna
- Sällan, cirka 25 % av gångerna
- Ibland, cirka 50 % av gångerna
- Ofta, cirka 75 % av gångerna
- Alltid, cirka 100 % av gångerna
- Jag har inte röstsytom

42. Påverkar röstsytomen din sinnesstämning?

- Märkbart
- Måttligt
- En aning
- Inte alls
- Jag har inte röstsytom

Här kan du kommentera frågeformuläret

TUSEN TACK FÖR ATT DU SVARAT!

Appendix D

Additional questions in the questionnaire for museum guides

Suostumus tutkimukseen osallistumisesta

Annan suostumukseni osallistua kyseiseen tutkimukseen ja hyväksyn, että nimettömät vastaukseni käytetään opiskelijan pro gradu tutkielmassa ja tieteellisessä julkaisussa.

Kyllä En

Oletko aiemmin täyttänyt tämän lomakkeen?

Opastusta koskevat lisäkysymykset

43. Luettele kaikki ne paikat, joissa olet opastanut viimeisen vuoden aikana (HUOM! kirjoita museoiden, rakennuksien ym. nimet) _____

44. Tunnetko, että äänesi rasittuu opastaessasi...

... alle kouluikäisille

- Ei lainkaan
- Vain vähän
- Jonkin verran
- Melko paljon
- Erittäin paljon
- En opasta kyseiselle ryhmälle
- En osaa sanoa

... alakoululaisille (1-6 luokka)

- Ei lainkaan
- Vain vähän
- Jonkin verran
- Melko paljon
- Erittäin paljon
- En opasta kyseiselle ryhmälle
- En osaa sanoa

... yläkoululaisille (7-9 luokka)

- Ei lainkaan
- Vain vähän
- Jonkin verran
- Melko paljon
- Erittäin paljon
- En opasta kyseiselle ryhmälle

- En osaa sanoa

... lukiolaisille

- Ei lainkaan
- Vain vähän
- Jonkin verran
- Melko paljon
- Erittäin paljon
- En opasta kyseiselle ryhmälle
- En osaa sanoa

... aikuisille

- Ei lainkaan
- Vain vähän
- Jonkin verran
- Melko paljon
- Erittäin paljon
- En opasta kyseiselle ryhmälle
- En osaa sanoa

45. Tunnetko, että äänesi rasittuu opastaessasi...

... Alle 10 henkilön ryhmälle

- Ei lainkaan
- Vain vähän
- Jonkin verran
- Melko paljon
- Erittäin paljon
- En opasta kyseiselle ryhmälle
- En osaa sanoa

... 10-20 henkilön ryhmälle

- Ei lainkaan
- Vain vähän
- Jonkin verran
- Melko paljon
- Erittäin paljon
- En opasta kyseiselle ryhmälle
- En osaa sanoa

... 21-30 henkilön ryhmälle

- Ei lainkaan
- Vain vähän
- Jonkin verran
- Melko paljon

- Erittäin paljon
- En opasta kyseiselle ryhmälle
- En osaa sanoa

... 31-40 henkilön ryhmälle

- Ei lainkaan
- Vain vähän
- Jonkin verran
- Melko paljon
- Erittäin paljon
- En opasta kyseiselle ryhmälle
- En osaa sanoa

... yli 40 henkilön ryhmälle

- Ei lainkaan
- Vain vähän
- Jonkin verran
- Melko paljon
- Erittäin paljon
- En opasta kyseiselle ryhmälle
- En osaa sanoa

46. Arvioi kuinka kaukana yleisöstä seisot opastaessasi (anna vastaus metreinä) HUOM! Arvioi etäisyys suhteessa niihin henkilöihin, jotka seisovat kauimpana sinusta _____

47. Opastatko samaan aikaan, kun tilassa on muita opastuksia?

- En koskaan, noin 0 % ajasta
- Harvoin, noin 25 % ajasta
- Joskus, noin 50 % ajasta
- Usein, noin 75 % ajasta
- Aina, noin 100 % ajasta

48. Opastatko samaan aikaan, kun tilassa on isoja ryhmiä (esim. kouluryhmiä) jotka eivät osallistu opastuksiin?

- En koskaan, noin 0 % ajasta
- Harvoin, noin 25 % ajasta
- Joskus, noin 50 % ajasta
- Usein, noin 75 % ajasta
- Aina, noin 100 % ajasta

Informerat samtycke

Jag samtycker till deltagande i föreliggande studie och godkänner att mina anonymiserade svar används i skribentens avhandling pro gradu samt i en vetenskaplig publikation.

Ja Nej

Har du tidigare fyllt i detta frågeformulär?

Tilläggsfrågor gällande ditt guidningsjobb

43. Räkna upp alla de platser där du guidat under det senaste året (OBS! skriv namnet på museerna, byggnaderna etc.) _____

44. Känner du att din röst blir ansträngd då du guidar...

... för barn under skolåldern

- Inte alls
- Bara lite
- En del
- Ganska mycket
- Våldigt mycket
- Jag guidar inte till ifrågavarande grupp
- Kan inte avgöra

... för en lågstadiegrupp (klass 1–6)

- Inte alls
- Bara lite
- En del
- Ganska mycket
- Våldigt mycket
- Jag guidar inte till ifrågavarande grupp
- Kan inte avgöra

... för en högstadiegrupp (klass 7–9)

- Inte alls
- Bara lite
- En del
- Ganska mycket
- Våldigt mycket
- Jag guidar inte till ifrågavarande grupp
- Kan inte avgöra

... för en gymnasiegrupp

- Inte alls
- Bara lite

- En del
- Ganska mycket
- Våldigt mycket
- Jag guidar inte till ifrågavarande grupp
- Kan inte avgöra

... för vuxna

- Inte alls
- Bara lite
- En del
- Ganska mycket
- Våldigt mycket
- Jag guidar inte till ifrågavarande grupp
- Kan inte avgöra

45. Känner du att din röst blir ansträngd då du guidar...

... för en grupp med under 10 personer

- Inte alls
- Bara lite
- En del
- Ganska mycket
- Våldigt mycket
- Jag guidar inte till ifrågavarande grupp
- Kan inte avgöra

... för en grupp med 10–20 personer

- Inte alls
- Bara lite
- En del
- Ganska mycket
- Våldigt mycket
- Jag guidar inte till ifrågavarande grupp
- Kan inte avgöra

... för en grupp med 21–30 personer

- Inte alls
- Bara lite
- En del
- Ganska mycket
- Våldigt mycket
- Jag guidar inte till ifrågavarande grupp
- Kan inte avgöra

... för en grupp med 31–40 personer

- Inte alls
- Bara lite
- En del
- Ganska mycket
- Våldigt mycket
- Jag guidar inte till ifrågavarande grupp
- Kan inte avgöra

... för en grupp med över 40 personer

- Inte alls
- Bara lite
- En del
- Ganska mycket
- Våldigt mycket
- Jag guidar inte till ifrågavarande grupp
- Kan inte avgöra

46. Uppskatta hur långt från publiken du brukar stå då du guidar (ange svaret i meter) OBS! Uppskatta avståndet enligt de som står längst bort i publiken_____

47. Guidar du samtidigt som det finns andra guidningar i utrymmet?

- Aldrig, cirka 0 % av gångerna
- Sällan, cirka 25 % av gångerna
- Ibland, cirka 50 % av gångerna
- Ofta, cirka 75 % av gångerna
- Alltid, cirka 100 % av gångerna

48. Guidar du samtidigt som det finns stora grupper i utrymmet (t.ex. skolgrupper) som inte deltar i guidningar?

- Aldrig, cirka 0 % av gångerna
- Sällan, cirka 25 % av gångerna
- Ibland, cirka 50 % av gångerna
- Ofta, cirka 75 % av gångerna
- Alltid, cirka 100 % av gånger

Pressmeddelande

Var nionde finländsk guide har en röststörning

Pro gradu-avhandling i logopedi

Fakulteten för humaniora, psykologi och teologi, Åbo Akademi

Resultaten från en färsk pro gradu-avhandling vid Åbo Akademi visar att ungefär var nionde finländsk guide har en röststörning. Nicole Cansu har undersökt förekomsten av röststörningar bland guider verksamma i Finland. Vanliga röstsymptom bland guider inkluderade heshet, behovet av att harkla sig då man pratar och en ansträngd röst. Guider med astma, långvarig snuva och stress var mer benägna att ha en röststörning än guider utan dessa riskfaktorer. Guiderna verkade trots det inte ha en lika hög risk att insjukna i röststörning jämfört med andra riskgrupper som till exempel lärare, präster och fotbollstränare, vilka blivit undersökta i tidigare studier. Detta kan enligt Cansu bero på att ungefär hälften av undersökningens deltagare endast guidade i medeltal i en timme per vecka eller mindre och ansträngde således inte rösten så mycket. Dessutom hade flera guider fått handledning i röst användning, vilket också kan förebygga röststörning. Trots det saknade ungefär en femtedel av deltagarna kunskap i röst användning, och detta berörde speciellt guider som var anställda på museer. Guiderna hade också specifika riskfaktorer i arbetsmiljön som påverkade rösten. Dessa var bland annat att guida i utrymmen med eko och störande bakgrundsbuller. Totalt 194 guider deltog i undersökningen genom att svara på en webbenkät med frågor om bakgrund, röst användning i samband med guidning och förekomst av röstsymptom. Cansu besökte också sju olika museer för att undersöka förekomsten av riskfaktorer i museiguidernas arbetsmiljö. Enligt Cansu var de vanligaste riskfaktorerna i museerna högt bakgrundsbuller och utrymmen med eko, vilket både kan orsaka röst ansträngning hos guiderna och försvåra talförståelsen hos publiken. Endast en bråkdel av museerna hade tillgång till röstförstärkning.

Ytterligare information fås av:

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