MSc Thesis

A Mixed Methods Design to Investigate Hearing Protection Behaviour among Young Adults under the Application of the Theory of Planned Behaviour and the Health Belief Model

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A Mixed Methods Design to Investigate Hearing Protection Behaviour among Young Adults under the Application of the Theory of Planned Behaviour and the Health Belief Model

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I hope you enjoy reading!

Anne Metzelaar
Wageningen, 9 March 2018

Summary

Introduction: Young adults are frequently exposed to loud music through attending festivals and concerts as well as through visiting discotheques, nightclubs, and parties. Therefore, they are at risk of developing permanent hearing problems, such as hearing loss, tinnitus, and hyperacusis. Young adults are recommended (1) to use hearing protection devices, (2) to move away from speakers, and (3) to take listening breaks at music venues, in order to prevent permanent hearing problems. Young adults are also advised (4) to have hearing check-ups.

Research objectives: The present research uses a mixed methods design to investigate the four types of hearing protection in Dutch young adults between 18 and 30 years old, under the application of the Theory of Planned Behaviour (TPB) and the Health Belief Model (HBM). The first research objective was to explore the factors towards the four types of hearing protection behaviour with a qualitative method. The second research objective was to examine the relationship between the factors and the four types of hearing protection behaviour with a quantitative method.

Research methodology: The interviews were conducted with two males and fourteen females (*n* = 16) in October 2017. The interviews were transcribed via the verbatim transcription method and were analysed by means of a thematic analysis. The questionnaire was developed on basis of the TPB and HBM. Items were derived from the literature as well as the interviews. The questionnaire was completed by 28 males and 129 females (*n* = 157) in December 2017 and was analysed with multiple and simple regression analyses and independent-samples *t*-tests.

Results: The interviews showed that respondents thought that hearing problems could be caused by music venues and could occur at a young age (*perceived susceptibility*). Respondents also thought that hearing problems could impact work or study performance, could limit social activities, and could affect communication (*perceived severity*). Respondents did not consider hearing protection devices and hearing check-ups as necessary, and did not think about or did not feel like moving away from speakers and taking listening breaks (*perceived barriers*). Some respondents thought that others performed hearing protection behaviour and felt that others, especially their parents and friends, wanted them to perform hearing protection behaviour, while other respondents did not (*subjective norm*). The survey showed that perceived susceptibility and perceived severity were not associated with the intention to perform the four types of hearing protection behaviour. Perceived barriers were significantly negatively associated with the intention to use hearing protection devices (β = -0.200; *p* = 0.015), to move away from speakers (β = -0.505; *p* = 0.000), and to have hearing check-ups (β = -0.183; *p* = 0.019). Subjective norm was significantly positively associated with the intention to use hearing protection devices (β = 0.325; *p* = 0.000), to take listening breaks (β = 0.139; p = 0.036), and to have hearing check-ups (β = 0.228 *p* = 0.005). The survey also revealed that 7.6% of the respondents experienced permanent hearing loss, 14.6% permanent tinnitus, and 14.0% permanent hyperacusis.

Discussion: The present research was the first research that investigated hearing protection behaviour, including, but not limited to the use of hearing protection devices. The interviews showed that the factors of the HBM, that is, perceived susceptibility, perceived severity, perceived barriers, and perceived benefits, and the factors of the TPB, that is, perceived behavioural control and subjective norm, were relevant to explain the four types of hearing protection behaviour. The survey showed that perceived barriers and subjective norm were both significantly associated with the intention to perform three of the four types of hearing protection behaviour. Until now, hearing conservation programmes often focus on providing knowledge and raising awareness about the risk involved in loud music exposure and the adverse consequences of hearing problems. However, hearing conservation programmes are recommended to promote the four types of hearing

protection behaviour as well. Further research is needed to add more factors to the model and to improve the reliabilities of the current questionnaire scales (Cronbach's alphas). Larger samples, preferably with an approximately equal number of male and female respondents, are also required.

Key words: Mixed methods design, young adults, music venues, hearing protection behaviour, Theory of Planned Behaviour, Health Belief Model

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Definitions

Tinnitus	A condition in which a person perceives sounds in the head or in the ears, without an external source. Sounds are often described as ringing, buzzing, hissing, humming, roaring, or whistling (Henry, Dennis & Schechter, 2005; Musiek, Baran, Shinn & Jones, 2012; Trevis, McLachlan & Wilson, 2016).
Hyperacusis	A condition in which a person has an increased sensitivity to sounds. Sounds are considered as too loud and are therefore often perceived as annoying or disturbing (Musiek et al., 2012; Paulin, Andersson & Nordin, 2016).

1. Introduction

1.1. Recreational noise exposure

Recreational noise exposure has significantly increased since the 1980s (Smith, Davis, Ferguson & Lutman, 2000) and is becoming a cause for public health concern, especially in young adults (Degeest, Clays, Corthals & Keppler, 2017a; Degeest, Keppler, Corthals & Clays, 2017b). Young adults are frequently exposed to loud music through attending music venues, such as festivals, concerts, discotheques, nightclubs, and parties (Balanay & Kearney, 2015; Beach, Williams & Gilliver, 2013; Beach, Gilliver & Williams, 2014; Degeest et al., 2017a; Degeest et al., 2017b; Gilles et al., 2012; Zhao, French, Manchaiah, Liang & Price, 2011). The World Health Organisation (WHO) recommends that the highest safe level of recreational noise exposure is 85 dB(A) up to a maximum of eight hours a day (WHO, 2015a; WHO 2015b; WHO 2015c). However, sound levels at festivals, concerts, discotheques, nightclubs, and parties are typically around 100 dB(A) (Beach et al., 2014; Derebery, Vermiglio, Berliner, Pothoff & Holguin, 2012; Gjestland & Tronstrad, 2017; Tin & Lim, 2000; Vogel, Van der Ploeg, Brug & Raat, 2009a) and are safe to listen to for no longer than fifteen minutes a day (WHO, 2015a; WHO, 2015b; WHO, 2015c) (Appendix A1).

1.2. Permanent hearing problems

The human ear consists of the three components – the outer ear, the middle ear, and the inner ear (Hong, Kerr, Poling & Dhar, 2013). The outer ear and the middle ear gather sounds and transmit vibrations to the inner ear. The cochlear hair cells, in the inner ear, convert sound vibrations into signals that travel to the brain (Hong et al., 2013). Recreational noise exposure can cause damage to the cochlear hair cells (Beach et al., 2016; Daniel, 2007; Harrison, 2008; Hendershot, Pakulski, Thompson, Dowling & Price, 2011) (Figure 1 and 2). Young adults are therefore at risk of developing permanent hearing problems, such as hearing loss, tinnitus, or hyperacusis (Beach et al., 2013; Beach, Nielsen & Gilliver, 2016; Shore, Roberts & Langguth, 2016; Zhao et al., 2011).

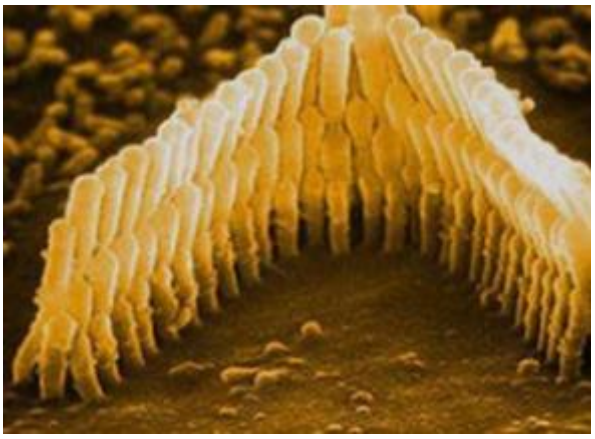

Figure 1. Normal hair cells (OorCheck, n.d.)

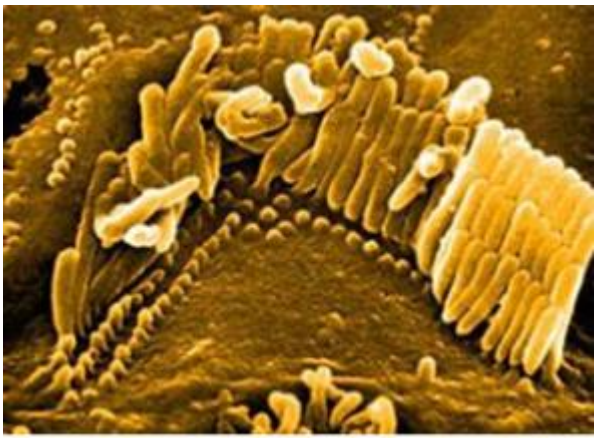

Figure 2. Damaged hair cells (OorCheck, n.d.)

Permanent hearing problems have the potential to reduce quality of life (Gommer, Hoekstra, Engelfriet, Wilson & Picavet, 2013; Henry, Dennis & Schechter, 2005; Holmes & Padgham, 2009). Permanent hearing problems are associated with psychological problems, such as anxiety, depression, frustration, and stress (Blaesing & Kroener-Herwig, 2012; Jüris et al., 2013; Nachtegaal et al., 2009; Park et al., 2017; Paulin, Andersson & Nordin, 2016; Tyler et al., 2014; Zeng et al., 2010). Persons with permanent hearing problems are also more likely to avoid noisy situations and to withdraw from social activities (Blaesing & Kroener-Herwig, 2012; Beach et al., 2016; Hurst, Davis, El

Rhalibi, Tully & Pan, 2015; Jüris et al., 2013; Koopman, Davey, Thomas, Wittkop & Verschuure, 2008; Nachtegaal et al. 2009; Tyler et al., 2014).

Permanent hearing problems seem to be common (Andersson, Lindvall, Hursti & Carlbring, 2002; Bhatt, Lin, & Bhattacharya, 2016; Jüris, et al., 2013; Park et al., 2017), but the percentages of hearing loss, tinnitus, and hyperacusis among young adults vary widely within the literature. Possible reasons for that are the lack of uniform definitions of normal hearing and hearing loss (Le Clercq, Van Ingen, Ruytjens & Van der Schroeff, 2016; Schlauch & Carney, 2012), tinnitus (Degeest et al., 2017b; Widén & Erlandsson, 2004), and hyperacusis (Paulin et al., 2016), as well as the use of different instruments. Some studies use pure-tone hearing screening tests while other studies rely on self-report. The percentages of permanent hearing loss among young adults range from 8.0% to 15.7% (Balanay & Kearney, 2015; Degeest et al., 2017b; Widén, Holmes, Johnson, Bohlin & Erlandsson, 2009). The percentages of permanent tinnitus vary between 3.1% and 20.0% (Balanay & Keaney, 2015; Beach et al., 2016; Degeest et al., 2017b; Gilles et al., 2012; Pawlaczyk-Łuszczyńska et al., 2017; Widén et al., 2009). The percentages of permanent hyperacusis range from 5.8% to 31.4% (Balanay & Kearney, 2015; Pawlaczyk-Łuszczyńska et al., 2017; Widén et al., 2009; Yilmaz, Tas, Bulut & Nurçin, 2017). No effective medical treatment exists to reverse hearing loss, tinnitus, and hyperacusis (Imam & Hannan, 2017; Shore et al., 2016; Truscott, 2016; Tyler et al., 2014). Hearing aids are also not able to restore hair cell damage (Daniel, 2007; Shore et al., 2016).

1.3. Hearing protection behaviour

Young adults need to perform hearing protection behaviour in order to prevent permanent hearing problems. Young adults are recommended to use hearing protection devices, such as earplugs and earmuffs, to reduce the level of exposure (Daniel, 2007; De Laat, Van Deelen & Wiefferink, 2016; Ramakers, Kraaijenga, Cattani, Van Zanten & Grolman, 2016; WHO, 2015a; WHO, 2015b). However, studies showed that the percentage of young adults, indicating that they used hearing protection devices at music venues, varied between 6.0% to 26.2% (Degeest, Corthals, Vinck & Keppler, 2014; Degeest et al., 2017a; Degeest et al., 2017b). The percentage was even lower in the Netherlands (4.0%) (Gorter, 2012). Young adults are also advised to stay away from speakers, to reduce the level of exposure (De Laat et al., 2016; Warner-Czyz & Cain, 2015; WHO, 2015a; WHO, 2015b), and to take listening breaks, to reduce the duration of exposure (De Laat et al., 2016; Helleman & Dreschler, 2015; WHO, 2015a; WHO, 2015b). Finally, young adults are recommended to have hearing check-ups in order to detect and monitor the development of hearing problems from the beginning (De Laat et al., 2016; Koopman et al., 2008; WHO, 2015a; WHO, 2015b).

1.4. Societal relevance

Hearing conservation programmes are needed to prevent permanent hearing problems and to induce hearing protection behaviour (Chung, Des Roches, Meunier & Eavey, 2005; Henderson, Testa & Hartnick, 2010; Keppler, Dhooge, Vinck, 2015). Hearing conservation programmes often focus on providing knowledge and raising awareness about the risk involved in loud music exposure and the adverse consequences of hearing problems (Daniel, 2007; Weichbold & Zorowka, 2003; Weichbold & Zorowka, 2007; Zhao et al., 2011). However, providing knowledge and raising awareness is often not enough to lead to a change in behaviour (Daniel, 2007; Weichbold & Zorowka, 2003; Weichbold & Zorowka, 2007; Zhao et al., 2011). The literature therefore recommends that research should use theoretical frameworks to investigate the socio-cognitive factors behind hearing protection behaviour (Vogel, Brug, Van der Ploeg & Raat, 2009b). This can provide valuable information about the factors that motivate or inhibit young adults to perform hearing protection behaviour. In turn, this can be helpful to develop future hearing conservation programmes, and to further optimise existing hearing conservation programmes.

1.5. Scientific relevance

The literature shows that the Theory of Planned Behaviour (TPB) and Health Belief Model (HBM) are suitable to investigate hearing protection behaviour (Appendix A2). Previous studies applied the theoretical frameworks, alone or in combination with each other, to gather data about the factors explaining the use of hearing protection devices at music venues, either with qualitative methods (Beach, Williams, & Gilliver, 2012) or quantitative methods (Degeest et al., 2017a; Gilles, Van Hal, De Ridder, Wouters & Van de Heyning, 2013; Keppler, Dhooge & Vinck, 2015; Rawool & Colligion-Wayne, 2008; Saunders, Dann, Griest & Frederick, 2013; Widén, 2013). Further research is needed to investigate the factors explaining hearing protection behaviour, including, but not limited to the use of hearing protection devices, in order to capture the multiple recommended strategies to prevent hearing problems.

Previous studies studied the factors explaining use of hearing protection devices in a Belgium (Degeest et al., 2017a; Gilles et al., 2013; Keppler et al., 2015), Swedish (Widén, 2013), Australian (Beach et al., 2012), and American (Rawool & Colligion-Wayne, 2008; Saunders et al., 2013) population, with different age groups. However, large differences were found in the use of hearing protection devices between Western countries. Swedish young adults were for example 12.78 times more likely to use hearing protection devices than American young adults, because of differences in noise-related attitudes (Widén, Holmes & Erlandsson, 2006). This raises the question whether findings of the earlier-mentioned studies are also generalisable to a Dutch population. Therefore, further research is needed to investigate hearing protection behaviour among Dutch young adults between 18 and 30 years old.

1.6. Research objectives and research questions

The present research uses a mixed methods design, consisting of two phases, to investigate following four types of hearing protection behaviour: (1) using hearing protection devices, (2) moving away from speakers, (3) taking listening breaks, and (4) having hearing check-ups. The qualitative method in the first phase will allow the researcher to explore the beliefs regarding the factors involved in the four types of hearing protection behaviour in a smaller sample of young adults. The results are needed to inform the quantitative method in the second phase, because previous studies only focussed on the factors towards the use of hearing protection devices. Therefore, no proper measurement instrument exists to investigate hearing protection behaviour, including, but not limited to the use of hearing protection devices. The quantitative method will allow the researcher to expand the understanding of the factors involved in the four types of hearing protection behaviour by sampling a larger number of young adults. Mixed methods designs are assumed to provide comprehensive results (Creswell, 2009), because the statistical data from quantitative methods are integrated with the detailed and in-depth data from qualitative methods (Malina, Nørreklit, & Selto, 2011).

The research objectives and corresponding research questions are stated below.

1.6.1. First research objective and research question

The first research objective is to explore the beliefs of Dutch young adults between 18 and 30 years old towards the four types of hearing protection behaviour with regards to the factors of the TPB and HBM. The first research question is as follows:

> *"What are the beliefs of Dutch young adults between 18 and 30 years old towards the four types of hearing protection behaviour with regards to the factors of the TPB and HBM?"*

This research questions will be answered by conducting semi-structured interviews.

To answer the first research question, the following sub questions are formulated:

- "How do Dutch young adults between 18 and 30 years old perceive their susceptibility to, and the severity of, permanent hearing problems?"
- "What do Dutch young adults between 18 and 30 years old perceive as the barriers to, and the benefits of, performing the four types hearing protection behaviour?"
- "What do Dutch young adults between 18 and 30 years old perceive as the subjective norm of performing the four types of hearing protection behaviour?"
- "How do Dutch young adults between 18 and 30 years old perceive their behavioural control of performing the four types of hearing protection behaviour?"
- "What is the intention to perform the four types of hearing protection behaviour of Dutch young adults between 18 and 30 years old?"
- "Which cues to action triggered Dutch young adults between 18 and 30 years old to perform the four types of hearing protection behaviour?"

1.6.2. Second research objective and research question

The second research objective is to examine the relationship between the factors of the TPB and the HBM and the four types of hearing protection behaviour among Dutch young adults between 18 and 30 years old. The second research question is as follows:

> *"What is the relationship between the factors of the TPB and HBM and the four types of hearing protection behaviour among Dutch young adults between 18 and 30 years old?"*

This research question will be answered by conducting a retrospective cross-sectional survey.

To answer the second research question, the following sub questions are formulated:

- "What is the relationship between perceived susceptibility and perceived severity, and the intention to perform the four types of hearing protection behaviour in Dutch young adults between 18 and 30 years old?"
- "What is the relationship between perceived barriers and perceived benefits, and the intention to perform the four types of hearing protection behaviour in Dutch young adults between 18 and 30 years old?"
- "What is the relationship between subjective norm and the four types of hearing protection behaviour in Dutch young adults between 18 and 30 years old?"
- "What is the relationship between perceived behavioural control and the intention to perform the four types of hearing protection behaviour in Dutch young adults between 18 and 30 years old?"
- "What is the relationship between the intention to perform, and the performance of, the four types of hearing protection behaviour in Dutch young adults between 18 and 30 years old?"
- "What is the relationship between cues to action, and perceived susceptibility and perceived severity in Dutch young adults between 18 and 30 years old?"

1.7. Thesis structure

This thesis is divided into several chapters. The next chapter covers the theoretical framework. The two chapters thereafter explain the research methodology and present the results of the interviews, followed by two chapters explaining the research methodology and the results of the survey. The discussion compares the interview results and survey results with previous studies. The discussion also describes the strengths and limitations of the present research and gives recommendations for future research and practical application. Finally, the appendix provides additional documents and supplementary information.

2. Theoretical framework

This chapter covers the theoretical framework. The factors of the Theory of Planned Behaviour and the Health Belief model will be explained and, thereafter, combined into one theoretical framework.

2.1. Theory of Planned Behaviour

The TPB is one of the most influential and popular theoretical frameworks for explaining and changing behaviours (Ajzen, 2011; Armitage & Connor, 2001a). The behavioural intention is the main factor in the TPB and is assumed to be formed by the factors *attitude*, *subjective norm*, and *perceived behavioural control* (Figure 3) (Ajzen, 1991; Ajzen & Manstead, 2007; Sheeran, Connor & Norman, 2001). Attitude, subjective norm, and perceived behavioural control are thought to follow automatically and consistently from behavioural, normative, and control beliefs (Ajzen, 2011; Ajzen & Manstead, 2007; Armitage & Connor, 2001a). The factors of the TPB will be further explained below, and examples related to hearing protection behaviour will be given in Box 1.

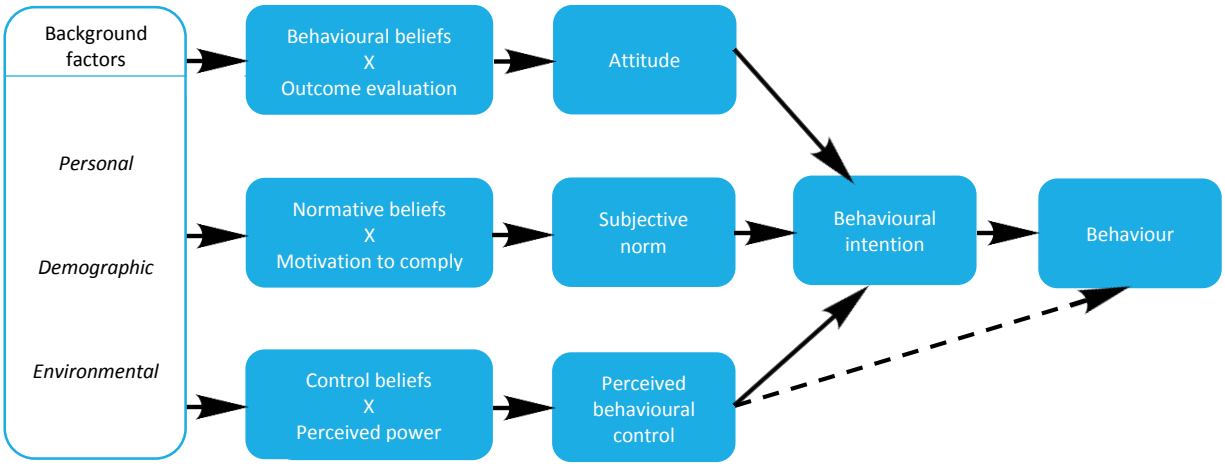

Figure 3. Theory of Planned Behaviour (based on Ajzen & Manstead, 2007; Davey, 2011)

Attitude Attitude represents a person's evaluation of performing a behaviour (Ajzen, 2002; Ajzen & Mainstead, 2007; Armitage & Conner, 2001a; Sheeran et al., 2001). The attitude is assumed to be determined by beliefs about the positive or negative consequences of performing a behaviour (*behavioural beliefs*). Each behavioural belief is weighted by the subjective value of the positive or negative consequences (*outcome evaluation*) (Ajzen & Manstead, 2007; Morris & Bennet, 2012).

Subjective norm Subjective norm reflects a person's perceived social pressure to perform, or not to perform, a behaviour (Ajzen, 2002; Armitage & Connor, 2001a; Morris & Bennett, 2012; Sheeran et al., 2001). Social pressure can arise from individuals or groups, for example family and friends (Ajzen & Manstead, 2007). The subjective norm is assumed to be formed by the perceptions of what others themselves do (*descriptive norms*) (Norman, Clarck & Walker, 2005; Rivis & Sheeran, 2003). If a person believes that others perform a behaviour, he or she is likely to intend to perform the behaviour as well. If a person believes that others do not perform a behaviour, he or she is not likely to intend to perform the behaviour (Norman et al., 2005; Rivis & Sheeran, 2003). The subjective norm is also assumed to be formed by beliefs about the normative expectations of others (*normative beliefs*) (Ajzen, 2002; Ajzen & Manstead, 2007). If a person perceives that others approve a behaviour, he or she is more likely to intend to perform it. If a person perceives that others disapprove a behaviour, he or she is less likely to intend to perform it (Armitage & Connor, 2001a). Each normative belief is weighted by the extent to which a person wishes fall into line with the

approval or disapproval of others (*motivation to comply*) (Armitage & Connor, 2001a; Morrison & Bennett, 2012).

Perceived behavioural control Perceived behavioural control indicates a person's perceived ability to perform a specific behaviour (Ajzen, 1991; Ajzen & Manstead, 2007; Morrison & Bennett, 2012; Sheeran et al., 2001). The behavioural control is assumed to be shaped by beliefs about the presence of factors that may facilitate or inhibit the performance of a behaviour (*control beliefs*) (Ajzen, 2002; Ajzen & Manstead, 2007). Each control belief is weighted by the extent to which factors have actual power to facilitate or inhibit the performance of a behaviour (*perceived power*) (Ajzen, 2002; Ajzen & Manstead, 2007). Perceived behavioural control has a direct link to behaviour (Figure 3), because a person who is confident that he or she can master a behaviour is more likely to succeed than a person who doubts his or her ability, even when they both have an equally strong intention (Ajzen, 1991; Ajzen & Manstead, 2007).

Behavioural intention Behavioural intention is an indication of how hard a person is willing to try, or how much effort a person is planning to make, in order to perform a behaviour (Ajzen, 1991). A person is expected to execute his or her intention when the opportunity presents itself (Ajzen, 1991; Ajzen & Manstead, 2007). In general, behavioural intentions are stronger when the attitude and subjective norm are more favourable, and the perceived behavioural control is greater (Ajzen & Manstead, 2007; Sheeran et al., 2001). In turn, the stronger an intention, the more likely that a behaviour is performed (Ajzen, 2002).

Background factors Personal, demographic, and environmental variables are regarded as background factors. They are assumed to influence behaviour indirectly by affecting behavioural, normative, and control beliefs (Ajzen & Manstead, 2007). Examples of personal variables are self-esteem, personality, emotions, and health concerns; examples of demographic variables are age, gender, ethnicity, education, income, and religion; and examples of environmental variables are diagnosis, stress, and media exposure (Ajzen & Manstead, 2007).

Box 1. The factors of the TPB likely to lead to hearing protection behaviour

Attitude A person believes that hearing protection behaviour can protect his or her hearing (*behavioural belief*) and thinks that good hearing is important for having a healthy life (*outcome evaluation*).
Subjective norm A person perceives social pressure to perform hearing protection behaviour, because he or she believes that others perform hearing protection behaviour (*descriptive norm*), because he or she perceives that others recommend him or her to perform hearing protection behaviour (*normative belief*), and because he or she values the opinion of others (*motivation to comply*).
Perceived behavioural control A person believes to be able to perform hearing protection behaviour, because he or she thinks that there are facilitating factors present (*control belief*) and that these facilitating factors have an actual influence (*perceived power*).
Intention A person is intending to perform hearing protection behaviour.

2.2. Health Belief Model

The HBM is one of the most widely recognised theoretical frameworks for explaining and changing health behaviours (Champion & Sugg Skinner, 2008; Glanz & Bisschop, 2010). The factors *perceived susceptibility*, *perceived severity*, *perceived benefits*, and *perceived barriers* assumed to explain the likelihood of a health behaviour (Figure 4) (Rosenstock, 1974). The HBM has been expanded later, when the factor *cues to action* was added (Becker & Maiman, 1975; Becker, Maiman, Kirscht, Haefner & Drachman, 1977). The factors of the HBM will be further explained below, and examples related to hearing protection behaviour will be given in Box 2.

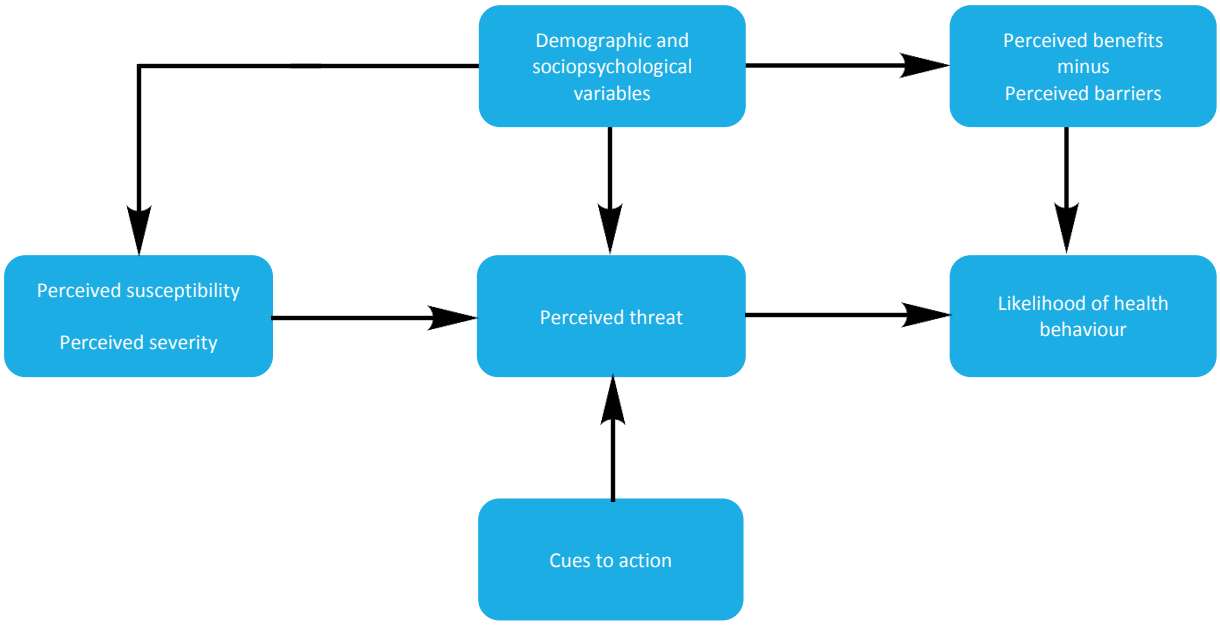

Figure 4. Health Belief Model (based on Becker & Maiman, 1975)

Perceived susceptibility The perceived susceptibility refers to the degree to which a person feels vulnerable to a health problem (Rosenstock, 1966). A person is expected to be more likely to perform a health behaviour, when he or she believes to be at risk for that health problem. A person is expected to be more likely to perform an unhealthy behaviour, when he or she believes not to be at risk (Hayden, 2013).

Perceived severity The perceived severity refers to the degree to which a person feels that a health problem has serious medical or social consequences (Champion & Sugg Skinner, 2008; Hayden, 2013; Rosenstock, 1966). Examples of medical consequences are death, disability or pain; and examples of social consequences are effects on family or friends and effects on work or study (Becker et al., 1977; Champion & Sugg Skinner, 2008). The perceived susceptibility and the perceived severity together are called the *perceived threat* (Champion & Sugg Skinner, 2008).

Perceived benefits The perceived benefits represents a person's evaluation of the effectiveness of a health behaviour in reducing the perceived threat (Becker & Maiman, 1975; Becker et al., 1977; Hayden, 2013; Rosenstock, 1966).

Perceived barriers The perceived barriers represents a persons' evaluation of psychological, or financial obstacles involved in a health behaviour (Becker & Maiman, 1975; Becker et al., 1977; Rosenstock, 1966).

Cues to action External and internal cues to action trigger a person to change his or her health behaviour (Becker & Maiman, 1975; Becker et al., 1977). Examples of external cues to action are mass media campaigns, newspaper or magazine articles, and family suddenly having a health problem (Becker & Maiman, 1975; Jones et al., 2015). An example of internal cues to action is the perception of bodily states, such as past experiences, pain, or symptoms (Becker & Maiman, 1975; Jones et al., 2015).

Demographic and sociopsychological variables Demographic and sociopsychological variables are regarded as background factors. They are assumed to influence behaviour indirectly by affecting the perceived susceptibility and perceived severity (Becker & Maiman, 1975; Champion & Sugg Skinner, 2008). Examples of demographic variables are age, sex, race and ethnicity; and examples of

sociopsychological variables are personality, social class, and social pressure (Becker & Maiman, 1975).

Box 2. The factors of the HBM likely to lead to hearing protection behaviour

Perceived susceptibility A person feels vulnerable to hearing problems, such as hearing loss, tinnitus, or hyperacusis, because of his or her recreational noise exposure.
Perceived severity A person believes that hearing problems, such as hearing loss, tinnitus, or hyperacusis, have serious medical or social consequences.
Perceived benefits A person believes that hearing protection behaviour will reduce his or her vulnerability to hearing problems, in order to prevent the serious medical or social consequences.
Perceived barriers A person believes that hearing protection behaviour has minimal physical, psychological, or financial obstacles.
Cue to action An external cue to action (e.g. reading a newspaper or magazine article about permanent hearing problems) or an internal cue to action (e.g. experiencing temporary hearing problems after music venues) triggers a person to perform hearing protection behaviour.

2.3. Integrated theoretical framework

The factors of the HBM, that is, perceived susceptibility, perceived severity, perceived barriers, perceived benefits, and cues to action, were combined with the factors of the TPB, that is, subjective norm, perceived behavioural control, and behavioural intention. The integrated theoretical framework (Figure 5) presents an overview of the suggested associations between the factors. The factor attitude (TPB) is not present, because attitude is considered as similar or identical to perceived barriers and perceived benefits (HBM). In both factors, persons are more inclined to perform a behaviour if the positive aspects outweigh the negative aspects (Noar & Zimmerman, 2005).

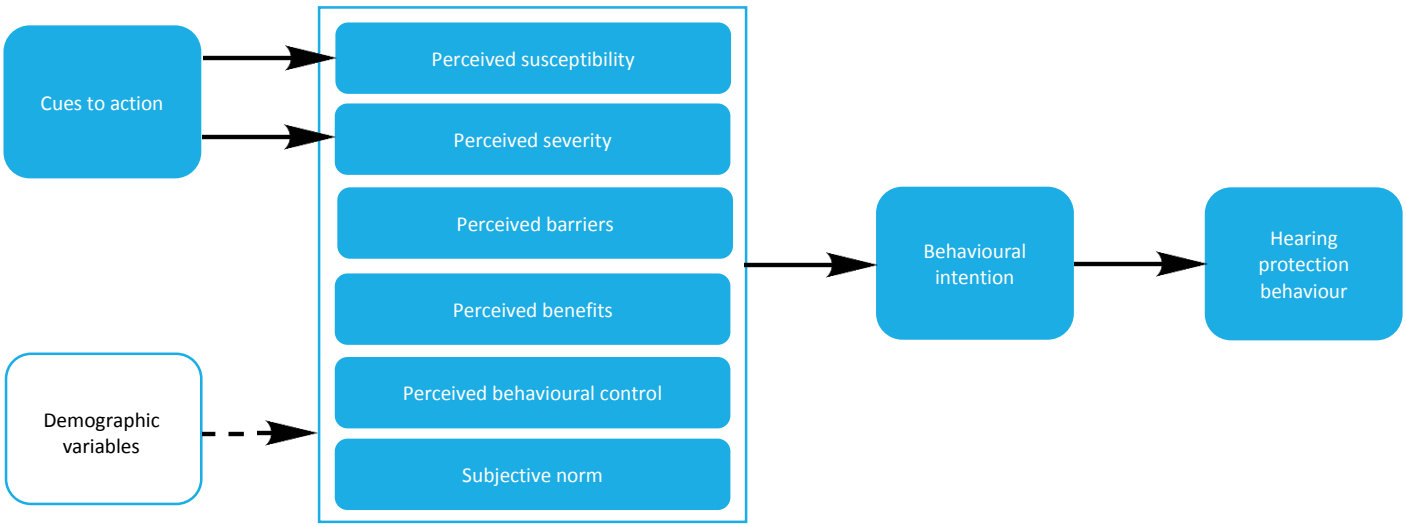

Figure 5. Integrated theoretical framework

Previous studies have investigated the use of hearing protection devices the application of the TPB and HBM. In short, qualitative research found that perceived susceptibility and perceived severity towards hearing problems were relevant for the use of hearing protection devices (Beach et al., 2012). Quantitative research found that respondents, who held strong barriers against the use of hearing protection devices, were less likely to use them (Keppler et al., 2015; Widén, 2013). Respondents, who believed in the benefits of the use of hearing protection devices, were more likely to use them (Saunders et al., 2015). Subjective norm and perceived behavioural control were also found to be associated with the use of hearing protection devices (Widén, 2013). Qualitative research found that respondents mentioned that their experience with hearing problems prompted

them use hearing protection devices (cues to action) (Beach et al., 2012). Quantitative research found that hearing problems were significantly associated with the use of hearing protection devices (Gilles et al., 2013; Widén, 2013). However, the present research investigates hearing protection behaviour, including, but not limited to the use of hearing protection devices.

3. Research methodology interviews

3.1. Recruitment

The semi-structured interviews were conducted between 26 and 31 October 2017. Respondents were eligible to participate when they spoke Dutch; when they were between 18 and 30 years old; and when they had visited a music venue at least once in the past 12 months. Respondents were not eligible to participate when they did not speak Dutch; when they were younger than 18 or older than 30; or when they had not visited a music venue in the past 12 months. No restrictions were made on ethnic background, professional status, or educational level. Convenience sampling is a non-probability sampling technique, meaning that respondents are selected according to their availability and accessibility to the researcher (Elfil & Negida, 2017). Respondents were recruited through convenience sampling, by personally approaching them and asking whether they had time to participate in an interview, as well as by spreading posters and flyers in one of the buildings of Wageningen University.

3.2. Respondents

Sixteen respondents were recruited in total. The respondents consisted of two males and fourteen females. The respondents were between 20 and 27 years old, with a mean age of 22.19 years. An overview of the respondents with regards to gender and age is presented in Appendix B1. All respondents were native Dutch. Fifteen respondents were students and one respondent was part-time employed.

3.3. Instrument

An interview guide was developed on basis of the theoretical framework, in order to give structure to the interviews and to ensure that the TPB and HBM factors were covered. The preliminary version of the interview guide was pre-tested. One respondent, who was not included in the present research, was asked to give comments on the length of the interview, as well as on the clarity and the wording of the questions. The interview guide was refined after the pre-test. Questions were removed, rearranged, and reformulated to advance the flow of the conversation. The final version of the interview guide started with some general questions, about age, place of residence, place of birth, and professional status, in order to obtain some background information about the respondents. The interview guide continued with some questions to establish the frequency and duration respondents' attendance at festivals and concerts and visits to discotheques, nightclubs, and parties, as well as with some questions to establish the frequency of and duration of respondents' experience with temporary hearing problems after music venues. The interview guide continued with some specific questions, about the perceived susceptibility and the perceived severity of hearing problems. The interview guide also included some questions to establish the perceived barriers, perceived benefits, subjective norm, the perceived behavioural control, and the behavioural intention towards performing the four types of hearing protection behaviour. The interview guide ended with a question, in which respondents were asked whether they knew other strategies to protect hearing, besides using hearing protection devices, moving away from speakers, taking listening breaks, and having hearing check-ups. The final version of the interview guide is presented in Appendix B2.

The interview guide was considered as a guideline while conducting the interviews. This meant that questions were removed, rearranged, or reformulated depending on the answers given by the respondents. Respondents were encouraged to continue their story or to give more details with different strategies. Verbal techniques were used, such as asking respondents to give an explanation or to provide an example, as well as summarising what respondents said and asking whether the summary was correct. Non-verbal techniques were also used, such as nodding and uh-huh-ing, as well as keeping silent and giving respondents a moment to think.

3.4. Procedure

At the start of the interviews, respondents were told that this research investigated hearing protection behaviour among young adults during music venues, such as festivals, concerts, discotheques, nightclubs, and parties. Respondents were informed that participation was voluntary, and that they could always refuse to answer certain questions or to end the interview at any time. Respondents were assured that the data would be processed anonymously and confidentially. Respondents were asked whether they gave permission to audio-record the interviews. The interviews lasted between 10 minutes and 24 seconds and 24 minutes and 32 seconds. At the end of the interviews, respondents were asked whether they had questions or remarks for the researcher. Respondents were able to choose an apple, banana, or a chocolate bar as an incentive. Respondents received a card with contact details, in case they came up with questions or remarks for the researcher later on.

3.5. Data analysis

Thematic analysis is a method for identifying, analysing, and reporting patterns within qualitative data (Braun & Clarke, 2006; Green & Thorogood, 2014). An 'inductive' or 'bottom-up' approach is that codes and themes derive as the researcher looks to the content of the data, while a 'deductive' or 'top-down' approach is that the codes and themes derive as the researcher brings pre-defined concepts and ideas to the data (Braun & Clarke, 2006; Braun & Clarke, 2012; Green & Thorogood, 2014). The inductive approach was used to derive the codes, and the deductive approach was used to derive the themes.

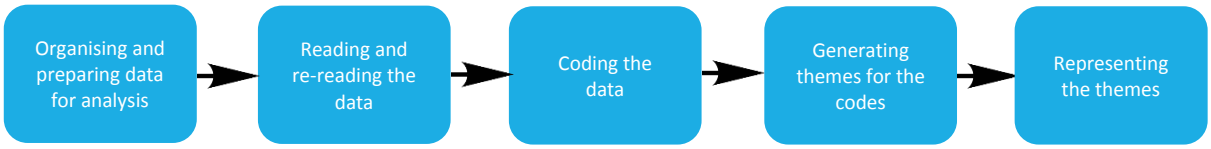

Figure 6. Five steps in the thematic data analysis (adapted and adjusted from Creswell (2009))

The thematic analysis was conducted in five steps, which were adapted and adjusted from Creswell (2009) (Figure 6). The first step was that the interviews were transcribed via the method of verbatim transcription, as the respondents gave permission to audio-record the interviews (*step 1: organising and preparing the data*). The second step was that the transcriptions were read and re-read and that notes were taken by hand, in order to obtain a general sense of the data (*step 2: reading and re-reading the data*). The third step was that sentences were segmented into categories, and that the categories were labelled with codes which captured the essence of the data. This process was done manually, by copy-pasting the sentences under the relevant codes into a separate computer file (*step 3: coding the data*). The fourth step was that the codes were placed under several themes. Eight themes were generated on basis of the theoretical framework and were named after the TPB and HBM factors. However, they were not able to cover the codes related to respondents' attendance at music venues and experience with hearing problems. Therefore, two new themes were generated (*step 4: generating themes for the codes*). The final step was that the themes were presented in a narrative story. Quotes were translated to illustrate the findings (Appendix B3). Some quotes contained three dots between brackets, which meant that that part of the quote was not relevant to the passage, and was therefore omitted. In the end, transcriptions were read again to see whether the story, including the quotes, were an accurate representation (*step 5: representing the themes*).

4. Results interviews

4.1. Music venues and hearing problems

4.1.1. Music venues

Almost all respondents attended festivals and concerts, and visited discotheques, nightclubs, and parties as well (R2, R3, R4, R5, R6, R7, R8, R10, R11, R12, R13, R14, and R16). One respondent only attended festivals and concerts (R15) and two respondents only visited discotheques, nightclubs, and parties (R1 and R9). The frequency of attending festivals and concerts varied between once a year (R5 and R10) and once every two months (R4 and R7). A lot of respondents spent a whole day at festivals (R6, R7, R10, R15, and R16), or stayed, as one respondent joked, *"Until the last bus goes back"* (R2). The duration of concerts varied between two (R6 and R11) and four hours (R14). Two respondents mentioned that they worked part time as hostess or hospitality employee at festivals and concerts (R3 and R16). The frequency and duration of working at festivals and concerts differed per time, as one of them explained:

> R3: *"I have a zero-hours contract, so I'm allowed to plan my own working hours."*
> R3: *"But you can be there for ten hours, could be even more. But it can also be four hours, or six hours."*

The frequency of visiting discotheques, nightclubs, and parties varied between once every three months (R9) and once every two weeks (R2, R6, and R7). Surprisingly, some respondents indicated that they did visit discotheques, nightclubs, and parties as often as they did when they were younger (R2, R3, R4, R11, and R16). The duration of visiting discotheques, nightclubs, and parties varied between one to two (R1) and seven to eight hours (R7).

All respondents indicated that the music was often loud, or even too loud, at music venues. Respondents identified four factors influencing the music volume. The first influencing factor was the type of music venue (R4, R6, R7, R8, R11, and R13). Five respondents thought that festivals and concerts played the loudest music (R4, R7, R8, R11, and R13), whereas one respondent thought that discotheques, nightclubs, and parties played the loudest music (R6). The second influencing factor was the location where respondents were at music venues (R4, R5, R6, R11, R12, R13, R14, and R16). Respondents thought that the music was louder when they stood closer to the stage (R11, R13, and R16) or the speakers (R4, R6, R12, R13, and R14). The third influencing factor was the setting of the music venues (R11, R13, and R16). Respondents thought that music venues that took place inside played louder music than music venues that took place outside. The final influencing factor was the type of music played at music venues: *"But it also depends a little bit on the type of music, I think. So if it's, uhm, rock, or just classical music.."* (R13).

4.1.2. Hearing problems

Permanent and temporary hearing problems were present among the respondents. One respondent experienced permanent tinnitus. The tinnitus used to be quite soft in the beginning, but became louder in the past two years: *"But now my ears are actually always ringing which doesn't resolve anymore"* (R4). Almost all respondents experienced temporary tinnitus after music venues. Most respondents thought that the temporary tinnitus was resolved when they woke up the next day (R2, R3, R5, R6, R9, R10, R11, R12, R14, and R16): *"Just until I fall asleep. I don't suffer from it the next morning"* (R3). A few respondents said that the temporary tinnitus was still present when they woke up the next day, but resolved within a short time frame when they started their daily activities and stopped paying attention to it (R7, R8, and R13). Finally, one respondent experienced temporary hearing loss, instead of temporary tinnitus, after music venues: *"It's not that my ears were ringing, uhm, yes, just that you hear things softer, I think. Kind of muted"* (R1).

4.2. Perceived susceptibility and perceived severity towards hearing problems

4.2.1. Perceived susceptibility towards hearing problems

All respondents believed that music venues could be harmful to hearing, and that permanent hearing problems could occur at a young age. A lot of respondents mentioned that music venues were especially harmful if they were attended on a frequent basis (R1, R2, R6, R7, R9, R12, R14, and R16) or for a long period of time (R1 and R6). Some respondents also mentioned that people could develop permanent hearing problems at a young age because they attended music venues that played really loud music (R1, R5, and R16) and they did not protect their hearing (R2, R12, and R16). One respondent said for example: *"Especially if you very often go to a place where there is super loud music, and if you don't protect your ears, I think that you can get hearing problems at a young age"* (R16). A few respondents thought that they could develop hearing problems without noticing it, because hearing problems developed slowly (R3 and R14) or expressed themselves later in life (R13).

A few respondents emphasised that music venues did not damage their own hearing, because they did not frequently attend them (R1, R6, R7, and R15): *"I don't go there so often, so I think to myself: "Okay if I go there now and then, then that's fine""* (R1).

4.2.2. Perceived severity towards hearing problems

All respondents believed that permanent hearing problems could have a negative impact on their lives. Some respondents said that permanent hearing problems could influence their work (R1, R7, R12, R13, R14, and R16) or study performance (R2, R7, R8, R9, R12, and R13). Some respondents also mentioned that permanent hearing problems could limit their social activities (R1, R2, R5, R7, R8, R9, R10, R12, R13, R14, and R16) and could decrease their ability to communicate, and in particular, their ability to hear (R1, R2, R3, R5, R6, R7, R9, R10, R12, R13, R14, and R16). Two respondents thought that this, in turn, could make them feel uncomfortable or even insecure:

> R5: *"You have to ask everything three times to everyone, and then you feel a little bit like a burden or something, for other people. I wouldn't like that, and then you feel less comfortable."*
> R12: *"You can be a bit insecure because of it, because you often have to ask people like: "Oh, what do you say?", than, maybe you're going to think: "Oh, that makes others a bit tired"."*

Respondents thought that permanent hearing problems were 'horrible' (R1), 'terrible' (R1, R2, and R10), 'tiring' (R6), 'annoying' (R14), 'bothersome' (R8, R9, R13, R14, and R16), 'not nice' (R5), and 'not pleasant' (R7 and R12). Two respondents experienced temporary hearing problems (which were not caused by music venues) for a longer period of time (R12 and R16). They also expressed some negative feelings:

> R12: *"Yes, that was really not pleasant. No, I'm really glad that I'm able to hear normally again."*
> R16: *"And then I thought: "Oh, I think it's really horrible if, if you really, uhm, have those problems permanently"."*

Two respondents thought that hearing aids and medical treatments could fix permanent hearing problems (R3 and R7). One respondent said for example: *"I really have the feeling that they can do anything these days"* (R3). Half of the respondents thought that hearing aids and medical treatments were effective in some cases, but not in all cases (R1, R2, R5, R6, R9, R12, R13, R15, and R16). One respondent said for example: *"Yes, a hearing aid could work maybe, I think. But that depends on the extent of the damage"* (R2). Finally, some respondents were not sure whether hearing aids and medical treatment could fix permanent hearing problems (R2, R9, R12, R13, R14, and R15).

4.3. Perceived barriers and perceived benefits of hearing protection behaviour

The interviews revealed the perceived barriers and perceived benefits of the four types of hearing protection behaviour. The perceived barriers and perceived benefits are presented in the following paragraphs and are also summarised in Figure 7.

4.3.1. Perceived barriers and perceived benefits of using hearing protection devices

Some respondents thought that hearing protection devices were not necessary, because they did not attend music venues very often (R3, R5, and R7): *"When I attended festivals for leisure, instead of work, then you just go once or twice or thrice per year and then you think: "Yes, this one time, it wouldn't be necessary""* (R3). Some respondents were not thinking about hearing protection devices (R1, R3, R8, R13, and R14): *"Not because I'm lazy, but rather because I (…) just don't think about it that much"* (R8). Other respondents did not use hearing protection devices out of ease (R7 and R12): *"But I actually don't know why I don't wear them at student parties. I guess that that is purely out of ease"* (R12).

Many respondents wanted to use hearing protection devices, but always forgot to bring (R2, R3, R4, R8, R11, R13, and R14) or to buy (R6) them. Two respondents said for example:

> R2: *"I always forget to bring them to parties, actually. (…) You just leave and then you're at a party and then you think: "Ah, shit, they're still in my room" (…) and "Oh yeah (…) I should have brought them", and then you lay down in bed and then you think: "Oh, I should have brought them because now I have ringing ears again"."*
> R6:*"I just forget to buy earplugs all the time. Every time I'm at a party, I think: "Ah, no, no earplugs". Then you're already there, and then you think: "Ah okay, next time" and then I forget them again."*

Respondents thought that hearing protection devices, particular the cheaper ones, were uncomfortable or painful to wear (R3, R11, R12, and R16): *"Yes, I have those (…) really cheap ones. Those that you have to insert, and those that have to expand, but that hurts in my ear, or something, and then they immediately fall out again. Those universal ones (…) that fall out again and that are uncomfortable to wear"* (R11). One respondent recently got an ear piercing, and thought that hearing protection devices were uncomfortable or painful to insert because of that (R8). However, this respondent continued: *"This isn't really the reason why I don't do that, you know. It's more like a little thing that comes with it, let's say"* (R8). One respondent said that hearing protection devices put pressure on ears: *"But when I removed them, I had the feeling that there was this pressure that.. No, it felt like they had been in there, let's say"* (R12).

Some respondents also thought that hearing protection devices could negatively influence their music experience (R3, R7, and R15). They had the feeling that they were less able to hear the music (R7) or that they blocked the music (R3 and R15) when they used hearing protection devices. One respondent said for example: *"Uhm, I also have a bit of a mixed feeling, if (…) you attend a concert because of the music, and if you wear earplugs, then (…) it seems like you actually don't want to go, for example"* (R15). In addition, some respondents thought that hearing protection devices could negatively affect their ability to communicate, and in particular, their ability to hear (R1, R3, and R4): *"I think: "Okay, I would want to use them", but then I think: "Okay, maybe I can't understand people anymore if they just want to say something", and then (…) you're on your own, focussed on yourself, instead of other people"* (R1).

Some respondents did not use hearing protection devices because they were ashamed to do so (R9, R13, and R15), while others were not (R10). They said for example:

R13: *"Uhm, yes, maybe also a (…) sort of shame or something, I mean, if you're wearing those eye-catching things in your ears (…) that you still feel like a loser or something*."
R15: *"No, I wouldn't do that. No, I would (…) be embarrassed."*
R10: *"It's not that I'm embarrassed when I wear them. I don't mind."*

One respondent did not use hearing protection devices because they did not look attractive (R5). Again, this was not case for all respondents:

R3:*"It's not that they're ugly or something, let's say. Yes, they're also not really pretty, because they're often orange or blue or something.. But I mean that people don't say like: Oh, what do you have right there?"."*
R11: "*Yes, they also look horrible, but I don't consider that as a huge issue, because it's just normal to wear earplugs."*

Respondents also mentioned quite some benefits during the interviews. Respondents thought that hearing protection devices could reduce the music volume, and therefore, could provide protection (R2, R3, R8, and R12): *"I thought like: "Wow". I had the feeling that they provided some protection."* (R12). Respondents mentioned that hearing protection devices could prevent permanent hearing problems in the long run (R1, R6, R7, R9, and R13) and could prevent temporary hearing problems in the short term (R3, R7, and R12). One respondent summarised all these benefits as: *"That the hearing is just protected and that the music is just a little less loud, so you get those ringing ears less quickly, I guess."* (R3).

Respondents also named some benefits related to custom earplugs, also known as musicians' earplugs. Respondents thought that custom earplugs worked better (R1, R5, and R13), looked better (R5) and were more comfortable to wear (R3, R11, and R13), compared to cheaper ones. However, two respondents explicitly mentioned that they were not intending to purchase custom earplugs (R1 and R11).

4.3.2. Perceived barriers and perceived benefits of moving away from speakers

Respondents mentioned that music venues were often too crowded, which made it more difficult to move further away from the speakers (R2, R6, R12, R13, and R14): *"Because there are too many people around you, so you're not able to move.. Yes, you're able to move, but you have to.. Yes, it's more difficult over there"* (R12). Two respondents also mentioned that they had to stand close to a speaker sometimes because that was the only available spot left (R7 and R15).

Half of the respondents also mentioned that they did not move when they stood near the speakers, because they attended music venues together with others (R2, R4, R6, R9, R10, R11, and R13). Some respondents said that others wanted to stand in front (R9, R10, R11, and R13), that they did not want to bother others with asking to move (R4, R6, and R9), and that they did not want to move to the back by themselves (R2 and R10). Two respondents said for example:

R4: *"I don't want to ask like: "Guys, shall we all go and stand in the back", while everyone thinks like: "No, we want to stand there" (…) So sometimes it's difficult because you have to take account of other people who are apparently not bothered by it."*
R9: *"If you stand there, with other people or something, then I think that I would find it difficult to say like: "Guys, shall we..", definitely when they really want to stand in front and if they seem to have less difficulties with the speakers, then it could be difficult because I wouldn't dare to say something about that."*

Respondents also wanted to see the show up close, and therefore, they sometimes did not move when they stood near the speakers (R3 and R14): *"It's rather another experience when you stand in front at a concert or a festivals, because you experience it (…) up close. You chose this person. (…) If you stand more in the back, you can't see this person at all"* (R3). Respondents also mentioned that they did not want to lose their good spot, and therefore, they sometimes did not move when they stood near the speakers (R5 and R11): *"But often you don't change your spot, because you stand perfectly in a crowd or something (…) and you want to keep your good spot. You're able to move, but you don't want to lose your good spot"* (R11). One respondent did move away from speakers sometimes, because this respondent did not feel like it (R13).

Respondents also mentioned a few benefits during the interviews. Respondents thought that moving further away from the speakers reduced the music volume (R7, R8, R13, R14, and R16). Respondents also mentioned that their ears hurt when they stood near the speakers, and therefore, they changed their position (R2, R6, R9, R10, R12, and R16): *"When I think like: "Oh, this really hurts my ears", then I think like: "Oh, this means that it's really too loud, so I have to stand further away"* (R16). Respondents also mentioned that the quality of the music was better, if they stood further away from the speakers (R1, R8, and R12). Two of them thought that they could hear the different instruments better (R1 and R15): *"And not only a bass or a guitar, or something"* (R1). One of them thought that one could hear the music on every side, instead of just one really loud side (R8). Furthermore, one respondent mentioned that moving further away from the speakers made it easier to communicate with others, which made music venues more fun (R3).

4.3.3. Perceived barriers and perceived benefits of taking listening breaks

The most frequently mentioned barrier was that respondents did not think about taking listening breaks (R2, R4, and R6): *"I don't think about taking a break. If it's just fun inside, then I just stay inside"* (R6). Respondents did not take breaks sometimes, because they went to music venues together with others (R10) or because they were bound to the programme (R13): *"You're of course bound to pauses at a concert. So, uhm, because with festivals, then you're of course kind of free to move around and to decide what you want to do, but with a concert, it's of course somewhat more.. Yes, the programme, let's say"* (R13). One respondent also did not take breaks sometimes as well, because this respondent did not feel like it (R4).

Respondents also mentioned quite some benefits during the interviews. Some respondents indicated that listening breaks were beneficial to get away from the music (R3, R4, R5, R14, and R15). One respondent said for example: *"It feels like that you have too much pressure on your head for a while, because of all that noise. Yes (...) you want get away from it for a while (…) otherwise, you could panic, maybe."* (R15). Two respondents especially liked to get away from the music when they had trouble with their ears (R4 and R10). Respondents also mentioned that breaks were beneficial to get away from the crowd (R3, R9, and R12) or to get a moment to relax (R3, R8, R12, R15, and R16). Respondents thought that breaks were beneficial to talk with other people (R5, R6, R8, R13, and R16): *"I go outside sometimes (…) to talk with someone for a moment. You have to scream to each other inside, which pretty hurts my ears as well"* (R6). Respondents also mentioned that breaks were beneficial to go to the toilet (R1, R2, R4, R5, R6, R8, R12, and R16) and to get something to drink (R6, R7, R8, R12, R13, and R15) or to eat (R2 and R3).

4.3.4. Perceived barriers and perceived benefits of having hearing check-ups

Some respondents recently checked their hearing, either by going to a general practitioner (R12) or a hearing care professional (R4 and R10), or by taking a self-test on internet (R9 and R13). Most respondents mentioned that they have checked their hearing when they were children (R3, R5, R14, and R16) or that they have never checked their hearing at all (R1, R2, R6, R7, R8, R11, and R15). The most frequently mentioned barrier was that respondents did not think that hearing check-ups were

necessary, because they did not have trouble with their hearing (R1, R2, R5, R6, R7, R8, R9, R10, R11, R15, and R16). One respondent said for example: *"I think my hearing is fine. It's not the case that I think like: "Oh, I hear worse than others, so I'm going to take a test because of that""* (R1). Furthermore, one respondent mentioned that hearing check-ups were never offered (R7). Another respondent mentioned that being afraid of the result could be a barrier (R9). Two respondents questioned the reliability of a self-test on internet (R5 and R13). One of them added: *"So I might prefer to a hearing care professional, but okay, I need to have the feeling then that there really is something serious, because you don't go there without a reason, of course"* (R5).

Some respondents mentioned one benefit of having hearing check-ups. They said that hearing check-ups revealed whether their hearing was good or bad (R6, R9, R12, and R16). One of them added: *"You just want to know whether it's fine or not, and if it's not fine, yes, than I might be that person who wants to do something about it. But if it's fine, then I'm glad"* (R12).

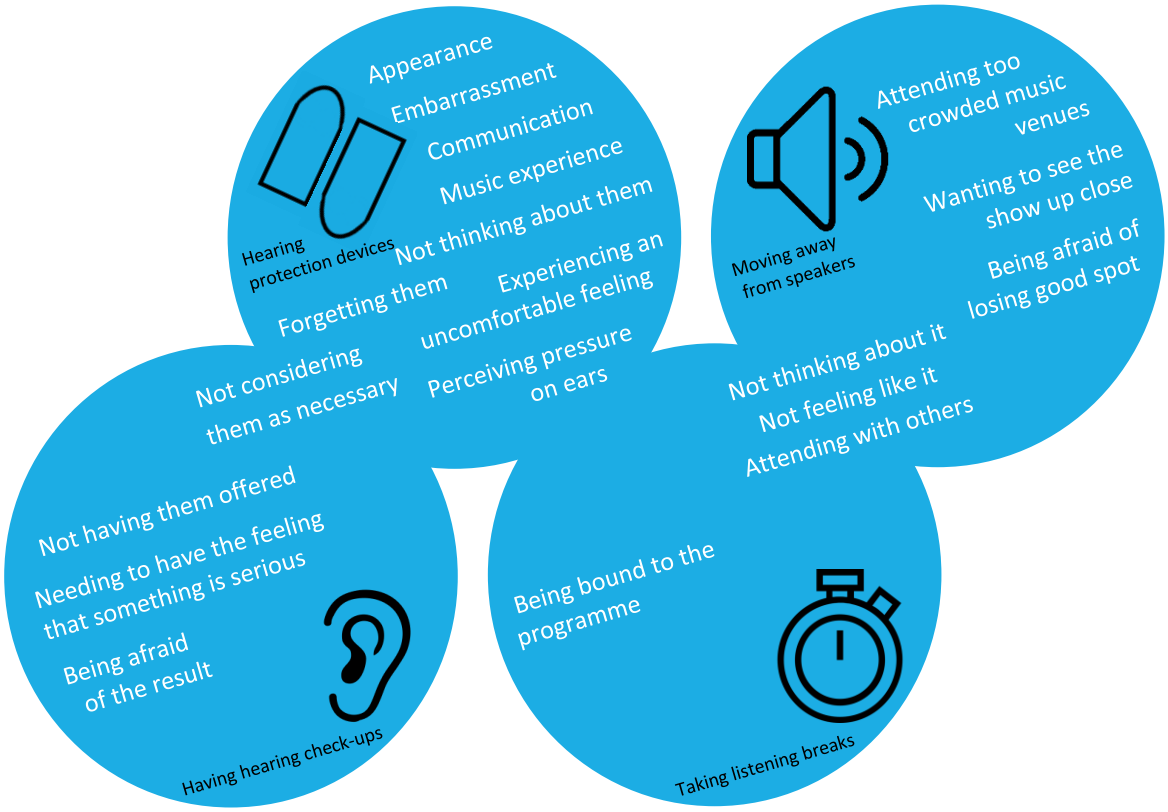

Figure 7. Perceived barriers of the four types of hearing protection behaviour

4.4. Perceived behavioural control towards hearing protection devices

The perceived behavioural control was not a strong theme throughout the interviews. Respondents only mentioned something related to the perceived behavioural control towards the use of hearing protection devices. Three respondents were confident that they were able to use hearing protection devices at music venues consistently. This was demonstrated by the fact that they always or almost always used them there (R4, R10, and R16):

> R4: *"I think that I have something where I should wear them once every two weeks, and I wear them almost always, let's say."*
> R10: *"I always bring my little earplugs."*
> R16: *"But I have them almost always with me in my bag."*

Contrary, many respondents were less confident that they were able to use hearing protection devices when they attended music venues, as demonstrated by the fact that they did not use them at all (R1, R3, R5, R6, R7, R8, R15), or that they did not use them consistently (R2, R9, R11, R12, R13, and R14). However, one respondent added: *"But when I think about it right now, now I think: "Yes, why not?", because it's only a small effort"* (R3).

4.5. Subjective norm towards hearing protection behaviour

A lot of respondents indicated that family and friends used hearing protection devices (R3, R4, R6, R7, R8, R9, R10, R11, R12, R13, R14, and R16), or even specifically custom earplugs (R1, R7, R13, R14, and R16). One respondent described: *"Yes, the moment when somebody insert them is a good reminder like: "Oh, right, earplugs, good idea""* (R16). Quite some respondents also mentioned that earplugs could be used more often at music venues (R1, R3, R4, R6, R9, R12, and R13). One respondent said for example: *"I also see people wearing earplugs sometimes at festivals or when you go out, uhm, but meanwhile, there are still a lot of people who don't do that. In my view, it's not a routine (…) or a habit or something. I think that there's still much to gain"* (R13).

One respondent knew that others left music venues when they thought that the music was too loud: *"If the music is played very loud, then I (...) can get over it like: "Yes, okay, it is what it is", but there are also people who really leave or who don't want to go back"* (R5). Some respondents indicated that they knew someone who stayed away from speakers (R7), who took breaks from listening (R15), and who wanted to have hearing check-ups (R8), while other respondents indicated that they did not know anyone who did that (R1 and R7).

Some respondents mentioned that others, without specifying who others were, would approve if they performed hearing protection behaviour (R8 and R11). One respondent said for example: *"Uhm, I don't think that they would really say that out loud, but I do think that they would approve it if I would do that, let's say."* (R8). Most respondents thought that their parents (R2, R4, R5, R6, R11, R13), especially their mother (R3, R6, R9, R12, R13, R14, and R16), and their friends (R2, R3, R16) wanted them to perform hearing protection behaviour. Some respondents specifically discussed this with their parents (R3, R4, R9, R13, and R14) or friends (R2 and R3), while other respondents did not discuss this with their parents (R5, R6, R11, R12, and R16) or friends (R16). Nevertheless, they still had the feeling that their parents and friends wanted them to perform hearing protection behaviour. One of them said for example: *"My mother always worries about everything. But yes, when I tell her that I go to such a venue, she says: "Yes, be careful". I'm not sure whether she would say that I should wear earplugs, but she would definitely say that I have to take it easy"* (R12).

Contrarily, some respondents indicated that they did not think that others wanted them to perform hearing protection behaviour (R1, R7, R10, and R15): *"Uhm, no I don't feel that pressure, really. It would be my own initiative then. Yes. Nobody said ever that to me"* (R7).

4.6. Behavioural intention towards hearing protection behaviour

Some respondents indicated that they wanted to pay more attention to hearing protection behaviour in the future (R3 and R10). One respondent said for example: *"I think that I'm going to pay more attention to it, yes. (…) Yes, it's more on my mind that I think: "Oh yeah, I shouldn't take it so easy, like: "It will be okay, or else they will do something about it""* (R3). Some respondents mentioned that they specifically intended to use hearing protection devices (R2, R6, R8, R11, R12, R14, and R16), but two of them added that the volume of the music determined whether they would actually use them (R11 and R16). Furthermore, two respondents specifically mentioned that they were not intending to use hearing protection devices, but they added that they would stay away from speakers (R5 and R9), or that they would take listening breaks (R9). Two respondents indicated that they specifically intended to go to a general practitioner (R4) or to a hearing care professional

(R11). Finally, two respondents indicated that they questioned whether they were not intending to pay more attention to hearing protection in the future (R1 and R13). One respondent said for example: *"Uhm, it would be good.. Uhm, but I question a bit whether I'm really going to do that in practice"* (R13).

4.7. Cues to action

Respondents named a few internal and external cues to actions to perform hearing protection behaviour. Two respondents indicated that they started to use hearing protection devices, and visited a hearing care professional, because they had trouble with their hearing, either permanent (R4) or on a regular basis (R10). Related to this, many respondents indicated that they would pay more attention to hearing protection behaviour when they would notice that they had more trouble with their hearing, in particular by using hearing protection devices (R5 and R15) or by having hearing check-ups (R5, R6, R7, R11, R14, and R15).

A lot of respondents knew others with permanent hearing problems, for example a father (R2 and R9), a mother (R6 and R16), an uncle (R5), a nephew (R13), a friend (R3, R5, R8, R10, R14, and R15), or a fellow student (R3). This was the reason to perform hearing protection behaviour for two of them (R3 and R14). One of them said for example: *"Yes, because I also have that friend, who has ringing ears, and (…) you're a bit confronted with that or something, because she never goes to a party, really, because she is afraid that it comes back"* (R14).

Three respondents mentioned that they had seen, read, or heard something about loud music and possible hearing problems in the media (R13, R15, and R16). This was the reason to perform hearing protection behaviour for one of them (R16). One respondent added that the media could report more about it: *"You don't hear a lot about it in the media or something. (…) The topic isn't really present, let's say, (…) and that's also the reason that I forget that. (…) If the media pays a little more attention to this, maybe this subject would get (…) the attention that it actually also deserves"* (R13).

4.8. Other hearing protective strategies

Some respondents came up with a number of other strategies to protect their hearing during the interviews, in addition to using hearing protection devices, moving away from speakers, taking listening breaks, and having hearing check-ups. Respondents mentioned that they could visit music venues less frequently (R1 and R7) or even that they could stop to visit them (R2, R6, R7, R15, and R16). However, some of the respondents did not consider the latter option as a serious option (R2 and R15). Furthermore, respondents mentioned some alternatives for wearing earplugs, such as covering ears with hands or putting hair before ears (R10), as well as wearing earmuffs (R13 and R16) or hats with flaps on both ears (R11). Interestingly, one respondent even made hearing protection devices herself: *"I have even pulled a tampon apart to put that into my ears (…) but it fell out again"* (R10). Finally, respondents mentioned lowering the volume at home radios (R3) and personal listening devices (R3, R5, and R11) as strategies to protect hearing. One respondent said for example: *"I always think that it's definitely smart that you can see on your phone when it is too loud. I make use of that"* (R11).

4.9. Summary

The interviews revealed that the factors of the HBM, that is, perceived susceptibility, perceived severity, perceived barriers, perceived benefits, and cues to action, and the factors of the TPB, that is, subjective norm, perceived behavioural control, and behavioural intention, were relevant to explain the four types of hearing protection behaviour. The perceived barriers and perceveived benefits, visualised in Figure 8, were overlapping between the four types of hearing protection behaviour, but more barriers and benefits could be distinguished, as described in Section 4.3.

Perceived susceptibility
Respondents believed that music venues could be harmful to hearing and that permanent hearing problems could occur at a young age.

Perceived severity
Respondents believed that permanent hearing problems could affect work or study performance, could limit social activities, and could affect communication. Hearing aids and medical treatment were believed to be effective in some cases.

Perceived barriers
Respondents did not consider hearing protection devices and hearing check-ups as necessary. Respondents were also not thinking about moving away from speakers and taking listening breaks and were not feeling like it. Respondents attended music venues with others, which prevented them to move away from speakers or to take listening breaks.

Perceived benefits
Respondents mentioned that the music volume was lower when they used hearing protection devices, moved away from speakers, or took listening breaks. Respondents also mentioned that this could provide protection. Respondents indicated that hearing check-ups revealed whether their hearing was good or bad.

Perceived behavioural control

High perceived behavioural control
Some respondents were confident in their ability to perform hearing protection behaviour, especially their ability to use hearing protection devices.

Less high perceived behavioural control
Some respondents were not confident in their ability to perform hearing protection behaviour, especially their ability to use hearing protection devices.

Subjective norm

Favourable subjective norm
Some respondents believed that others performed hearing protection behaviour and felt that others wanted them to perform hearing protection behaviour

Less favourable subjective norm
Some respondents believed that others did not perform hearing protection behaviour and did not feel that others wanted them to perform hearing protection behaviour.

Cues to action
Respondents started to perform hearing protection behaviour, because:
- They experienced hearing problems
- They knew someone with hearing problems
- They were informed by the media

Intention

Strong intentions
Some respondents wanted to pay more attention to hearing protection behaviour in the future, or specifically intended use hearing protection devices or to have hearing check-ups.

Less strong intentions
Some respondents were not going to pay more attention to hearing protection behaviour in the future, or were specifically not intending to use hearing protection devices.

Figure 8. Summary interviews

5. Research methodology survey

5.1. Recruitment

The retrospective cross-sectional survey was conducted between 30 November and 13 December 2017. The same inclusion criteria and exclusion criteria for the interview respondents were used for the survey respondents. The survey respondents were also recruited through convenience sampling. Family and friends of the researcher were invited to fill in the questionnaire and were asked to spread the word. The questionnaire was also promoted online via different Facebook pages and Facebook groups.

5.2. Respondents

Two hundred fifty two respondents started the questionnaire, and 157 completed questionnaires were analysed. Ninety five questionnaires (37.7%) were excluded, because respondents did not finish the questionnaire or did not fill in the questionnaire seriously. The respondents consisted of 28 males (17.8%) and 129 females (82.2%). The respondents were between 18 and 30 years old (M = 22.026, SD = 2.242). The majority of the respondents were native Dutch (*n* = 152, 96.8%). Respondents were also Belgian (*n* = 1, 0.6%), German (n = 1, 0.6%), Surinamese (*n* = 1, 0.6%), and partly Surinamese partly Dutch (*n* = 2, 1.3%). The majority of the respondents were students (*n* = 143, 91.1%). Respondents were also entrepreneur (n = 1, 0.6%), employed (*n* = 12, 7.6%), and unemployed (*n* = 1, 0.6%). The majority of the respondents obtained a diploma on high educational level *(n* = 90, 57.3%). Respondents also achieved an intermediate educational level (*n* = 66, 42.0%) and a lower educational level (*n* = 1, 0.6%)[1].

5.3. Instrument

There was no proper existing measurement instrument that investigated the factors behind hearing protection behaviour, including, but not limited to the use of hearing protection devices. Therefore, the questionnaire was developed on basis of the theoretical framework. The literature was consulted to formulate the questions about music venues and hearing problems, as well as to formulate the items concerning the perceived susceptibility and perceived severity towards hearing problems. The interviews were consulted to formulate the items regarding the perceived benefits and perceived barriers of the four types of hearing protection behaviour, as well as to formulate the questions about the cues to action. The primary version of the questionnaire was pre-tested. Two respondents, who were not included in the present research, were asked to give comments on the length of the questionnaire, as well as on the clarity and wording of the items. The questionnaire was refined after the pre-test (Appendix C). The final version of the questionnaire included 113 items, which are explained in more detail in the following sections.

5.3.1. Background information

Respondents were asked to fill in their gender and age. Respondents were also asked to select their ethnic background, professional status, and highest obtained educational diploma.

5.3.2. Music venues

Respondents were asked to indicate whether they attended festivals or concerts and whether they visited discotheques, nightclubs, or parties in the past in the twelve months (based on Vogel, Brug, Van der Ploeg & Raat, 2010). If respondents did, they were asked to indicate the frequency of their

[1] This division was made on basis of the Statistics Netherlands (2016). Low educational levels included primary school and lower secondary education (in Dutch: “VMBO” and “MAVO”). Intermediate educational levels included higher secondary education (in Dutch: “HAVO” and “VWO”) and intermediate vocational education (in Dutch: “MBO”). High educational levels included higher vocational education (in Dutch: “HBO”), and university bachelor and university master (in Dutch: “WO”).

attendance at festivals or concerts and their visits to discotheques, nightclubs, or parties. Respondents were also asked to rate the music volume at both types of music venues. The answer possibilities were “too quiet”, “quiet”, “good”, “loud”, and “too loud” (based on Gilles et al, 2013).

5.3.3. Hearing protection behaviour under the application of the TPB and HBM

The perceived susceptibility and the perceived severity towards hearing problems, as well as the perceived barriers, perceived benefits, perceived behavioural control, subjective norm, and behavioural intention of the four types of hearing protection behaviour, were assessed with 93 items, formulated as statements. Respondents were asked to indicate the extent of their agreement with the statements on a seven-point scale, going from “totally disagree” to “totally agree”. The scores on the items in the scales were summed and divided by the number of items in the scales. Cronbach’s alphas were calculated to check the internal consistencies of the scales. Values lower than 0.6 are considered as poor, and values higher than 0.7 are considered as acceptable (George & Mallery, 2003). Before calculating the mean scores and Cronbach’s alphas, the negatively phrased items were reverse scored.

Perceived susceptibility The perceived susceptibility towards hearing problems was measured with five items, e.g. “I think exposure to loud noise can hurt my hearing”. The items were based on the literature (Gilles et al., 2013; Svensson, Morata, Nylén, Krieg & Johnson, 2004; Vogel et al., 2010). One item was removed in the analysis, to improve the Cronbach’s α from 0.565 to 0.674.

Perceived severity The perceived severity towards hearing problems was measured with eight items, e.g. “Hearing problems will limit my ability at work or study”. The items were based on the literature (Rawool & Colligon-Wayne, 2008; Saunders et al., 2014; Vogel et al., 2010). One item was removed in the analysis, to improve the Cronbach’s α from 0.609 to 0.637.

Perceived barriers and perceived benefits The items measuring the perceived barriers and perceived benefits towards the four types of hearing protection behaviour were based on the interviews. The perceived barriers of using hearing protection devices were measured with ten items, e.g. “I think earplugs are uncomfortable to wear”. The Cronbach’s α was 0.820. The perceived benefits were measured with four items, e.g. “My ears are protected when I wear earplugs”. The Cronbach’s α was 0.490. The alpha was not substantially higher when one item was removed.

The perceived barriers of moving away from speakers were measured with seven items, e.g. “I stand next to speakers sometimes, because I want to see the show up close”. The Cronbach’s α was 0.743. The perceived benefits were measured with three items, e.g. “My ears hurt less if I stand further away from the speakers”. One item was removed in the analysis, to improve the Cronbach’s α from 0.372 to 0.438.

The perceived barriers of taking listening breaks were measured with six items, e.g. “I do not take breaks from listening sometimes, because I do not want to lose my good spot”. The Cronbach’s α was 0.695. The perceived benefits were measured with two items, e.g. “I think it is pleasant to get away from the music sometimes, and therefore, I take a break from listening”. The Cronbach’s α was 0.710.

The perceived barriers of having hearing check-ups were measured with five items, e.g. “I do not think it is needed to check my hearing”. One item was removed in the analysis, to improve the Cronbach’s α from 0.393 to 0.592. The perceived benefits of having hearing check-ups were measured with two items: “I am curious whether my hearing is good or bad” and “I think the development of hearing problems can be detected at an early stage, if I check my hearing”. The latter item was removed in the analysis, because the Cronbach’s α was 0.237.

Perceived behavioural control Perceived behavioural control is commonly assessed by asking respondents to indicate the extent to which they think that performing a behaviour is difficult and the extent to which they think that performing a behaviour is up to them (Ajzen, 2002). Based on this, the perceived behavioural control was measured with four items for each of the four types of hearing protection behaviour. The first item was: "I am confident that I am able to perform hearing protection behaviour (e.g. to use hearing protection devices)". The second item was: "I think it is easy to perform hearing protection behaviour (e.g. to move away from speakers)". The third item was: "The decision to perform hearing protection behaviour (e.g. to take listening breaks) is beyond my control". The fourth item was: "It is not entirely up to me whether I perform hearing protection behaviour (e.g. to have hearing check-ups)". The Cronbach's alphas were 0.637, 0.790, 0.716, and 0.618.

Subjective norm The subjective norm towards hearing protection behaviour was measured with eleven items, e.g. "My family protects their hearing", "My family thinks it is important for me to protect my hearing", and "I wish to fall into line with my family's opinions". Besides family, the items also concerned friends, fellow students or colleagues, and (health) professionals. The Cronbach's α was 0.788.

Behavioural intention Respondents were asked to indicate the extent to which they intended perform the four types of hearing protection behaviour. The behavioural intentions were: "I intend to use hearing protection devices next time I attend a music venues", "I intend to stay away from speakers next time I attend a music venue", and "I intend to take breaks from listening next time I attend a music venue". The behavioural intention to have hearing check-ups was measured with two items. The scores on the statements "I intend to check my hearing every year by going to a (health) professional" and "I intend to check my hearing every year by taking a self-test on internet" were summed, and divided by 2, in order to get a mean score for the intention to have hearing check-ups. The Cronbach's α was 0.431.

Behaviour Respondents were asked to indicate the extent to which they performed the four types of hearing protection behaviour. The behaviours were: "I always wear earplugs at music venues", "I always stay away from speakers at music venues", and "I always take listening breaks at music venues". Two items measured the extent to which respondents had hearing check-ups. The first item focussed on hearing check-ups provided by (health) professionals; and the second item focussed on hearing check-ups provided by the internet. The Cronbach's α was 0.484.

Cues to action The cues to action were based on the interviews. The first cue to action was measured with the yes-no question: "Have you heard, read, or seen something in the media about loud music and possible consequences for hearing?". If respondents did, they were asked to indicate what they had heard, read, or seen. The second cue to action was measured with the yes-no question: "Do you know someone with permanent hearing problems, because of exposure to loud sound?". If respondents did, they were asked to indicate who they knew with permanent hearing problems.

5.3.4. Hearing problems

The presence of permanent hearing loss, permanent tinnitus, and permanent hyperacusis was evaluated with three yes-no questions (based on Gilles et al., 2013; Paulin et al., 2016). Respondents were referred to three questions about the frequency of temporary hearing loss, tinnitus, and hyperacusis, when they indicated that they had no permanent hearing loss, tinnitus, or hyperacusis. The answer possibilities were "never", "seldom", "sometimes", "often", and "always" (based on Gilles et al., 2013). Respondents were referred to three questions about the duration of temporary hearing loss, tinnitus, and hyperacusis, when they indicated that they experienced temporary hearing problems. The answer possibilities were "less than thirty minutes", "between thirty minutes and two

hours", "between two hours and six hours", "between six hours and one day", and "more than one day" (Gilles et al., 2013).

5.4. Procedure

The software programme Qualtrics was used to make the questionnaire and to collect the data. At the start of the questionnaire, respondents were told that this research investigated hearing protection behaviour among young adults during music venues. Respondents were informed that they were eligible to participate when they spoke Dutch; when they were between 18 and 30 years old; and when they had visited a music venue at least once in the past 12 months. Respondents were also informed that participation was voluntary, and that they could always refuse to answer certain questions or to end the survey at any time. Respondents were assured that the data would be processed anonymously and confidentially. Contact details were provided in case they came up with questions or remarks later on. Respondents had to select a box indicating that they read the cover text and that they agreed to participate. Respondents generally completed the survey between 9 minutes and 21 seconds and 16 minutes and 28 seconds. At the end of the questionnaire, respondents were given the opportunity to receive the results of the survey in due course, and to participate in a lottery to win one of the two BOL.com-vouchers of ten euros.

5.5. Data analysis

Statistical Package for the Social Sciences (SPSS) was used to analyse the data and p-values ≤ 0.05 were regarded as statistically significant. Descriptive statistics determined the number and percentages of respondents attending music venues and experiencing hearing problems, and indicated the means and standard deviations of the responses to the questionnaire items regarding the TPB and HBM factors.

Regression analyses were performed in order to examine the relationship between the factors. First, four multiple regression analyses were performed in order to analyse whether perceived susceptibility, perceived severity, perceived barriers, perceived benefits, perceived behavioural control, and subjective norm were associated with the intention to perform the four types of hearing protection behaviour. Second, four simple regression analyses were performed in order to analyse whether the intention to perform the four types of hearing protection behaviour, in turn, was associated with the performance of the four types of hearing protection behaviour. Histograms and normal probability plots were demanded in order to check whether the data were approximately normally distributed.

Independent-samples t-tests were performed to examine the cues to action. The independent-samples t-test evaluated differences in scores on perceived susceptibility and perceived severity between:

- Respondents who experienced permanent hearing problems and respondents who did not;
- Respondents who knew someone with permanent hearing problems and respondents who did not;
- Respondents who were informed by the media and respondents who were not.

The Bonferroni correction was used to ensure that the probability of making a type I error remained below 0.05. Therefore, p-values ≤ 0.008 were regarded as statistically significant.

6. Results survey

6.1. Music venues and hearing problems

6.1.1. Music venues

One hundred thirty seven respondents (87.3%) attended festivals and concerts, and visited discotheques, nightclubs, and parties as well. Twelve respondents (7.6%) only attended festivals and concerts and eight respondents (5.1%) only visited discotheques, nightclubs, and parties. The majority of the respondents attended festivals and concerts once every six months (*n* = 49, 31.2%) and visited discotheques, nightclubs, and parties once a month (*n* = 31, 19.7%) (Table 1).

Table 1. Results from the descriptive statistics – Frequency music venues

Frequency attendance at festivals and concerts	***n***	**%**	**Frequency visits to discos, nightclubs, and parties**	***n***	**%**
± Once a year	31	19.7	± Once a year	7	4.5
± Once every 6 months	49	31.2	± Once every 6 months	12	7.6
± Once every 4 months	29	18.5	± Once every 4 months	22	14.0
± Once every 3 months	21	13.4	± Once every 3 months	14	8.9
± Once every 2 months	5	3.2	± Once every 2 months	12	7.6
± Once a month	12	7.6	± Once a month	31	19.7
± Once every 2 weeks	1	0.6	± Once every 2 weeks	19	12.1
± Once a week	1	0.6	± Once a week	23	14.6
> Once a week	0	0.0	> Once a week	5	3.2

Note: The percentages refer to the whole sample (*n* = 157).

The majority of the respondents thought that the music at festivals and concerts was loud (*n* = 77, 49.0%), or even too loud (*n* = 39, 24.8%). Likewise, the majority of the respondents considered the music at discotheques, nightclubs, and parties as loud (*n* = 61, 38.9%) or too loud (*n* = 58, 36.9%) (Table 2).

Table 2. Results from the descriptive statistics – Volume music venues

Music volume at festivals and concerts	***n***	**%**	**Music volume at discos, nightclubs, and parties**	***n***	**%**
Too quiet	0	0.0	Too quiet	0	0.0
Quiet	0	0.0	Quiet	0	0.0
Good	33	21.0	Good	26	16.6
Loud	77	49.0	Loud	61	38.9
Too loud	39	24.8	Too loud	58	36.9

Note: The percentages refer to the whole sample (*n* = 157).

6.1.2. Hearing problems

Twelve respondents (7.6%) experienced permanent hearing loss, 23 respondents (14.6%) permanent tinnitus, and 22 respondents (14.0%) permanent hyperacusis. Of them, some respondents reported one permanent hearing problem (*n* = 30, 19.1%), while other respondents reported two (*n* = 12, 7.6%), or even three (*n* = 1, 0.6%), permanent hearing problems.

Respondents, who had no permanent hearing problems, were asked to indicate the frequency and duration of temporary hearing problems (Table 3). Eleven respondents (7.0%) often experienced temporary hearing loss after they attended music venues, eighteen respondents (11.5%) often experienced temporary tinnitus, and five respondents (3.2%) often experienced temporary hyperacusis. Hearing loss, tinnitus, and hyperacusis persisted for more than one day in four respondents (2.5%), two respondents (1.3%), and three respondents (1.9%), respectively.

Table 3. Results from the descriptive statistics – Frequency and duration temporary hearing problems

	Hearing loss		Tinnitus		Hyperacusis	
	n	**%**	***n***	**%**	***n***	**%**
Frequency						
Always	0	0.0	5	3.2	2	1.3
Often	11	7.0	18	11.5	5	3.2
Sometimes	41	26.1	45	28.7	21	13.4
Seldom	43	27.4	45	28.7	32	20.4
Never	50	31.8	21	13.4	75	47.8
Duration						
< 30 minutes	29	29.2	39	24.8	30	19.1
30 minutes – 2 hours	35	22.3	38	24.2	14	8.9
2 hours – 6 hours	17	10.8	20	12.7	6	3.8
6 hours – 1 day	10	6.4	14	8.9	7	4.5
> 1 day	4	2.5	2	1.3	3	1.9

Note: The percentages refer to the whole sample (*n* = 157).

6.2. Hearing protection behaviour under the application of the TPB and HBM

The means and standard deviations for the perceived susceptibility and the perceived severity towards hearing problems, as well as the perceived barriers, perceived benefits, perceived behavioural control, subjective norm, and behavioural intention of the four types of hearing protection behaviour, were determined with descriptive statistics. Multiple and simple regression analyses were performed in order to examine the relationship between the factors. The results presented in the following paragraphs and are also shown in Tables 4, 5, 6, and 7.

6.2.1. Using hearing protection devices

Perceived barriers were negatively associated with intention to use hearing protection devices (β = -0.200; $p = 0.015$). Perceived behavioural control (β = 0.450; $p = 0.000$) and subjective norm (β = 0.325; $p = 0.000$) were positively associated. The model accounted for about 49.9% of the variation in intention (adjusted $R^2 = 0.499$). Intention was positively associated with behaviour (β = 0.645; $p = 0.000$), and accounted for about 41.3% of the variation in behaviour (adjusted $R^2 = 0.413$) (Table 4).

Table 4. Results from the multiple and simple regression analyses – Using hearing protection devices

			Intention		Behaviour	
	M	**SD**	**β**	***p***	**β**	***p***
1. Perceived susceptibility	6.465	0.544	-0.003	ns		
2. Perceived severity	5.687	0.543	-0.081	ns		
3. Perceived barriers	3.536	1.048	-0.200	0.015		
4. Perceived benefits	5.768	0.634	-0.012	ns		
5. Perceived behavioural control	5.698	0.844	0.450	0.000		
6. Subjective norm	4.426	0.774	0.325	0.000		
7. Intention	5.310	1.628			0.645	0.000

Note: Dependent variable intention: $R = 0.720$, $R^2 = 0.519$, adjusted $R^2 = 0.499$, and $F = 26.939$.
Dependent variable behaviour: $R = 0.645$, $R^2 = 0.417$, adjusted $R^2 = 0.413$, and $F = 110.654$.

6.2.2. Moving away from speakers

Perceived barriers were negatively associated with intention to move away from speakers (β = -0.505; $p = 0.000$). The model accounted for about 26.7% of the variation in intention (adjusted $R^2 = 0.267$). Intention was positively associated with behaviour (β = 0.611; $p = 0.000$), and accounted for about 37.0% of the variation in behaviour (adjusted $R^2 = 0.370$) (Table 5).

Table 5. Results from the multiple and simple regression analyses – Moving away from speakers

			Intention		Behaviour	
	M	**SD**	**β**	***p***	**β**	***p***
1. Perceived susceptibility	6.465	0.544	0.066	ns		
2. Perceived severity	5.687	0.543	0.016	ns		
3. Perceived barriers	3.818	0.956	-0.505	0.000		
4. Perceived benefits	5.271	0.958	-0.001	ns		
5. Perceived behavioural control	4.682	1.196	0.013	ns		
6. Subjective norm	4.426	0.774	0.082	ns		
7. Intention	5.180	1.305			0.611	0.000

Note: Dependent variable intention: $R = 0.543$, $R^2 = 0.295$, adjusted $R^2 = 0.267$, and $F = 10.450$.
Dependent variable behaviour: $R = 0.611$, $R^2 = 0.374$, adjusted $R^2 = 0.370$, and $F = 92.484$.

6.2.3. Taking listening breaks

Perceived benefits (β = 0.546; *p* = 0.000) and subjective norm (β = 0.139; p = 0.036) were positively associated with intention to take listening breaks. The model accounted for about 41.4% of the variation in intention (adjusted $R^2 = 0.414$). Intention was positively associated with behaviour (β = 0.410; p = 0.000), and accounted for about 16.3% the variation in behaviour (adjusted $R^2 = 0.163$) (Table 6).

Table 6. Results from the multiple and simple regression analyses – Taking listening breaks

			Intention		Behaviour	
	M	**SD**	**β**	***p***	**β**	***p***
1. Perceived susceptibility	6.465	0.544	0.015	ns		
2. Perceived severity	5.687	0.543	-0.060	ns		
3. Perceived barriers	4.286	0.984	-0.095	ns		
4. Perceived benefits	4.949	1.266	0.546	0.000		
5. Perceived behavioural control	4.764	1.085	0.087	ns		
6. Subjective norm	4.426	0.774	0.139	0.036		
7. Intention	5.030	1.434			0.410	0.000

Note: Dependent variable intention: R = .661, $R^2 = 0.437$, adjusted $R^2 = 0.414$, and F = 19.398.
Dependent variable behaviour: R = 0.410, $R^2 = 0.168$, adjusted $R^2 = 0.163$, and F = 31.322.

6.2.4. Having hearing check-ups

Perceived barriers were negatively associated with intention to have hearing check-ups (β = -0.183; *p* = 0.019). Perceived benefits (β = 0.171 *p* = 0.027) and subjective norm (β = 0.228 *p* = 0.005) were positively associated. The model accounted for about 13.8% of the variation in intention (adjusted $R^2 = 0.138$). Intention was positively associated with behaviour (β = 0.250; *p* = 0.002), and accounted for about 5.7% of the variation in behaviour (adjusted $R^2 = 0.057$) (Table 7).

Table 7. Results from the multiple and simple regression analyses – Having hearing check-ups

			Intention		Behaviour	
	M	**SD**	**β**	***p***	**β**	***p***
1. Perceived susceptibility	6.465	0.544	0.022	ns		
2. Perceived severity	5.687	0.543	0.026	ns		
3. Perceived barriers	4.790	1.050	-0.183	0.019		
4. Perceived benefits	5.631	1.267	0.171	0.027		
5. Perceived behavioural control	5.225	0.846	0.153	ns		
6. Subjective norm	4.426	0.774	0.228	0.005		
7. Intention	4.003	1.151			0.250	0.002

Note: Dependent variable intention: R = 0.414, $R^2 = 0.171$, adjusted $R^2 = 0.138$, and F = 5.158.
Dependent variable behaviour: R = 0.250, $R^2 = 0.063$, adjusted $R^2 = 0.057$, and F = 10.373.

6.2.5. Cues to action

Forty three respondents (27.4%) experienced permanent hearing problems, 60 respondents (38.2%) knew someone with permanent hearing problems, and 124 respondents (79.0%) heard something about loud music and hearing problems in the media. The independent-samples *t*-tests indicated that there were no significant differences in the scores on the perceived susceptibility and perceived severity between respondents who had these cues to actions and respondents who had not (Table 8, 9, and 10).

Table 8. Results from the independent-samples *t*-tests – Cue to action experiencing permanent hearing problems

	M_{cue}	SD_{cue}	$M_{no\ cue}$	$SD_{no\ cue}$	*t*	*p*
1. Perceived susceptibility	6.570	0.420	6.425	0.581	1.488	ns
2. Perceived severity	5.694	0.626	5.684	0.510	0.104	ns

Table 9. Results from the independent-samples *t*-tests – Cue to action knowing someone with permanent hearing problems

	M_{cue}	SD_{cue}	$M_{no\ cue}$	$SD_{no\ cue}$	*t*	*p*
1. Perceived susceptibility	6.529	0.649	6.425	0.467	1.164	ns
2. Perceived severity	5.667	0.523	5.670	0.557	-0.368	ns

Table 10. Results from the independent-samples *t*-tests – Cue to action hearing something in the media about loud music and hearing problems

	M_{cue}	SD_{cue}	$M_{no\ cue}$	$SD_{no\ cue}$	*t*	*p*
1. Perceived susceptibility	6.498	0.560	6.341	0.467	1.479	ns
2. Perceived severity	5.718	0.529	5.571	0.584	1.381	ns

6.3. Summary

Table 11 summarises the statistically significant factors associated with the intention to perform the four types of hearing protection behaviour. The multiple regression analyses revealed that the model explained 49.9% of the variation (adjusted R^2) for the intention to use hearing protection devices, 26.7% for the intention to move away from speakers, 41.4% for the intention to take listening breaks, and 13.8% for the intention to have hearing check-ups.

Table 11. Summary – Significant factors associated with the intention to perform the four types of hearing protection behaviour

Intention to use hearing protection devices	**Intention to move away from speakers**	**Intention to take listening breaks**	**Intention to have hearing check-ups**
Perceived barriers***** (-)	Perceived barriers******* (-)		Perceived barriers***** (-)
		Perceived benefits******* (+)	Perceived benefits***** (+)
Perceived behavioural control******* (+)			
Subjective norm******* (+)		Subjective norm***** (+)	Subjective norm****** (+)

Note: * = p ≤ 0.05, ** = p ≤ 0.01, *** = p ≤ 0.001, (+) = positive association, (-) = negative association.

7. Discussion

Young adults frequently expose themselves to loud music through attending festivals and concerts as well as through visiting discotheques, nightclubs, and parties (Balanay & Kearney, 2015; Beach et al., 2013; Beach et al., 2014; Degeest et al., 2017a; Degeest et al., 2017b; Gilles et al., 2012; Zhao et al., 2011). Therefore, young adults are at risk of developing permanent hearing problems, such as hearing loss, tinnitus, and hyperacusis (Beach et al., 2013; Beach et al., 2016; Shore et al., 2016; Zhao et al., 2011). Interviews were conducted with sixteen respondents to answer the first research question: *"What are the beliefs of Dutch young adults between 18 and 30 years old towards the four types of hearing protection behaviour with regards to the factors of the TPB and HBM?"*, and thereafter, a questionnaire was completed by 157 respondents to answer the second research question: *"What is the relationship between the factors of the TPB and HBM and the four types of hearing protection behaviour among Dutch young adults between 18 and 30 years old?".*

7.1. Main interview and survey results

The respondents of the interviews considered themselves to be susceptible to hearing problems, as they thought that hearing problems could be caused by music venues and could occur at a young age. The interview respondents also believed in the severity of the consequences, as they thought that hearing problems could impact work and study performance, could limit social activities, and could affect communication. However, the survey showed that respondents who felt vulnerable to hearing problems and who believed in the seriousness of the consequences, were not more likely to intend to perform any of the four types of hearing protection behaviour than the respondents who did not feel vulnerable and who did not believe in the seriousness. This might be a reflection of the small study sample. Previous studies, which included just 163 and 235 respondents, were also not able to find relations between perceived susceptibility and perceived severity and the use of hearing protection devices (Keppler et al., 2015; Saunders et al., 2013).

The main barriers of hearing protection devices were that the interview respondents forgot to bring or to buy them or considered them as uncomfortable or painful. Some interview respondents were not thinking about hearing protection devices. Hearing protection devices were also thought to affect the music experience and to decrease the ability to communicate. Some interview respondents mentioned barriers related to embarrassment or looks, but other interview respondents said that embarrassment or looks were no issues for them. The survey showed that perceived barriers were significantly negatively associated with the intention to use hearing protection devices. One previous study also found that respondents who held strong barriers used hearing protection devices significantly less often (Keppler et al., 2015), while another study did not (Saunders et al., 2013). In contrast, Saunders et al. (2013) found that respondents who believed in the benefits used hearing protection devices significantly more often, while the present research, as well as Keppler et al. (2015) did not. Perhaps, this is because Saunders et al. (2013) used remarkably more items to measure the perceived benefits (7 items) than the present research (4 items) and Keppler et al. (2015) (3 items).

The main barriers of moving away from speakers for the interview respondents were that music venues were too crowded. The interview respondents also mentioned that they attended music venues with others, that they wanted to see the show up close, and that they were afraid to lose their good spot. The survey showed that respondents who held strong barriers were less likely to intend to move away from speakers. In contrast, the perceived benefits were not associated with behavioural intention.

The main barriers of taking listening breaks were that the interview respondents did not think about taking them, as well as that they attended music venues with others and that they were bound to the programme. The survey pointed out that perceived barriers were not associated with the intention to take listening breaks. The survey also indicated that respondents who appreciated the benefits of listening breaks were more likely to intend to take them.

The interview respondents thought that hearing check-ups were not necessary, because they considered their hearing as good. Respondents also mentioned that hearing check-ups were never offered and that they needed to have the feeling that something was serious. The survey revealed that respondents who held strong barriers were less likely to intend to have hearing check-ups. The survey also indicated that perceived benefits were significantly positively associated with behavioural intention.

The interviews showed that respondents generally perceived a quite low behavioural control, but surprisingly, the survey revealed that respondents generally perceived a quite high behavioural control. Perceived behavioural control was the strongest significant predictor of the intention to use hearing protection devices ($\beta = 0.450$). One suggestion can be made in order to explain the discrepancy between the qualitative and the quantitative method. Perhaps, the survey respondents were more familiar with hearing protection devices than the interview respondents, because they might have used hearing protection devices more often. This might have resulted in a higher perceived behavioural control.

Perceived behavioural control is considered to be similar or identical to Bandura's (1977) self-efficacy, because, in both factors, persons are more inclined to perform a behaviour when they believe in their ability to do so (Ajzen, 1991; Noar & Zimmerman, 2005). Previous studies found significant relations between perceived behavioural control (Widén, 2013) or self-efficacy (Keppler et al., 2015) and the use of hearing protection devices, just as the present research, but another study did not (Saunders et al., 2013). The present research, as well as the studies conducted by Widén (2013) and Keppler et al. (2015), measured perceived behavioural control or self-efficacy with items related to the use of hearing protection devices when attending music venues. However, Saunders et al. (2015) investigated the factors behind the use of hearing protection devices when working in noise and using power tools, next to attending concerts. Therefore, their items did not specifically concerned the use of hearing protection devices at music venues. Perhaps, this explains the fact that Saunders et al. (2015) could not find any significant relation, in contrast to the present research and other previous studies (Keppler et al., 2015; Widén, 2013).

Some interview respondents believed that others performed hearing protection behaviour and felt that others, especially their parents and friends, wanted them to perform hearing protection behaviour. In contrast, other interview respondents believed that others did not perform hearing protection behaviour and did not feel that others wanted them to perform hearing protection behaviour. The survey revealed that subjective norm was significantly positively associated with the intention to use hearing protection devices. Subjective norm was also found to have an influence on the use of hearing protection devices in one previous study (Widén, 2013), but not in another one (Keppler et al., 2015). However, it is unclear why the present research, as well as a previous study (Widén, 2013), found a relation regarding the subjective norm, while another study did not (Keppler et al., 2015). Furthermore, the survey conducted in the present research showed that subjective norm was also significantly positively associated with the intention to take listening breaks and the intention to have hearing check-ups.

The survey revealed that respondents who intended to use hearing protection devices were more likely to use them. However, one previous study found that the intention to use hearing protection devices was not significantly associated with behaviour (Widén, 2013). This difference might be

explained by the differences in study population. The present research focussed on young adults, aged between 18 and 30 years old, while Widén (2013) focussed on adolescents, aged between 15 and 19 years old. Adolescents are more likely to engage in sensation-seeking behaviour than young adults (Steinberg et al., 2008). Because of this, adolescents might be less likely to execute their intention to use hearing protection devices than young adults, for example because they might want to feel the music through their bodies (Hetu & Fortin, 1995; Welch & Fremaux, 2017). Furthermore, the survey conducted in the present research revealed that respondents who intended to move away from speakers, to take listening breaks, and to have hearing check-ups, were also more likely to do that.

The survey showed that 7.6% of the respondents experienced permanent hearing loss, 14.6% permanent tinnitus, and 14.0% permanent hyperacusis. Previous studies also found relatively high percentages of permanent hearing problems among young adults (Figure 9). Temporary hearing problems were quite present as well. The survey found that 68.2% of the respondents experienced temporary hearing loss, 86.6% temporary tinnitus, and 52.2% temporary hyperacusis after music venues. The high percentages of permanent and temporary hearing problems stress the importance of performing hearing protection behaviour, as they strengthen the impression that young adults put their hearing at risk when they attend festivals and concerts or visit discotheques, nightclubs, and parties.

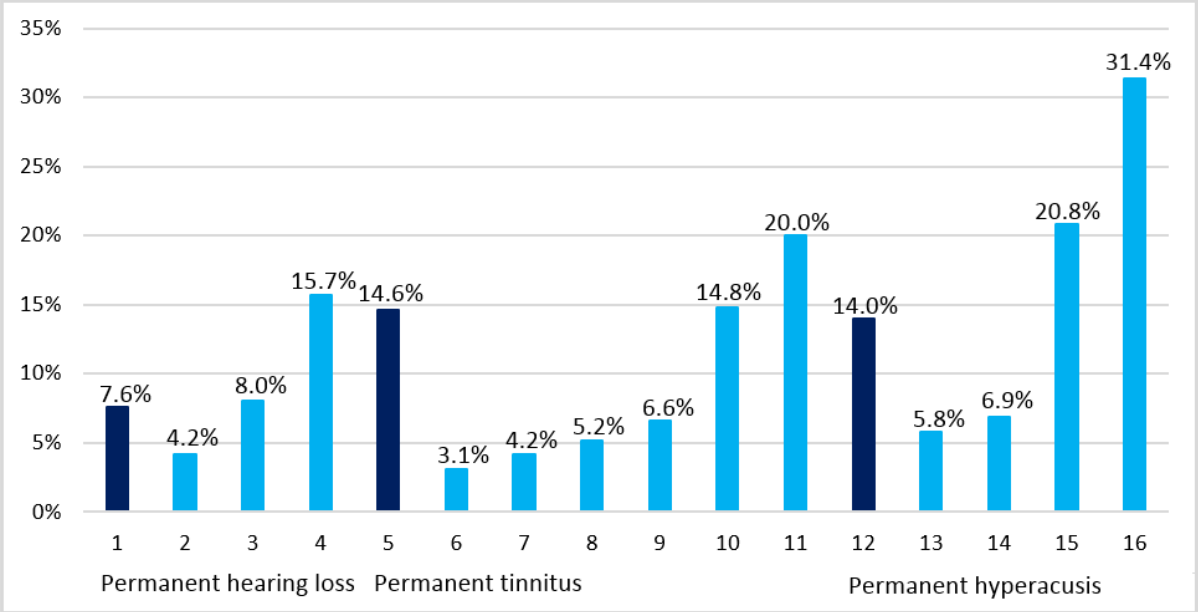

Figure 9. Percentages of permanent hearing loss, tinnitus, and hyperacusis among young adults found in the present research (dark blue) compared with percentages found in previous studies (light blue)[2]

Previous studies concluded that hearing problems served as cues to action to perform hearing protection behaviour (Gilles et al., 2013; Widén, 2013). They found that adolescents with hearing problems were more inclined to use hearing protection devices than adolescents without hearing problems, by performing regression analyses to examine the relationship between the presence of hearing problems and the use of hearing protection devices. However, cues to actions are linked with the *perceived threat,* i.e. the perceived susceptibility and the perceived severity, and not with the *likelihood of health behaviour,* in the original HBM (Figure 4). Therefore, the present research

[2] Percentages were found by (1) Present research, (2) Widén et al., 2009, (3) Balanay et al., 2015, (4) Degeest et al., 2017b, (5) Present research, (6) Widén et al., 2009, (7) Balanay et al., 2015, (8) Pawlaczyk-Łuszczyńska et al., 2017, (9) Degeest et al., 2017b, (10) Gilles et al., 2012, (11) Beach et al., 2016, (12) Present research, (13) Yilmaz et al., 2017, (14) Pawlaczyk-Łuszczyńska et al., 2017, (15) Balanay et al., 2015, and (16) Widén et al., 2009.

performed independent-samples *t*-tests to evaluate whether respondents with hearing problems scored significantly higher on perceived susceptibility and perceived severity than respondents without hearing problems. The present research concluded that hearing problems did not serve as cues to action to perform hearing protection behaviour, because no significant differences were found in the scores on perceived susceptibility and perceived severity.

7.2. Strengths and limitations

Previous studies have assessed hearing protection behaviour under the application of the TPB and HBM with qualitative methods (Beach et al., 2012) or quantitative methods (Degeest et al., 2017a; Gilles et al., 2013; Keppler et al., 2015; Rawool & Colligion-Wayne, 2008; Saunders et al., 2013; Widén, 2013). However, they specifically focussed on the use of hearing protection devices. The present research was the first research that investigated hearing protection behaviour, including, but not limited to the use of hearing protection devices, with a mixed methods design. The interviews were exploratory and facilitated the collection of in-depth and detailed data about the factors underlying the four types of hearing protection behaviour. The perceived barriers and perceived benefits, as well as the cues to action, were not identified before in previous studies. This information was therefore incorporated into the questionnaire. The survey facilitated the collection of statistical data regarding the factors underlying the four types of hearing protection behaviour, in order to examine the relationship between them. The qualitative method and quantitative method provided comprehensive results, because the detailed and in-depth data from the interviews were integrated with the statistical data from the survey. Besides, the qualitative method, combined with the quantitative method, enabled the researcher to compare the results from each method in order to check for consistencies. This allowed the researcher to make a suggestion to explain the apparent ambiguities regarding the perceived behavioural control.

The present research combined the factors of the TPB and HBM into one theoretical framework, while taking the links in the original models (Figure 3 and 4) into account. This research linked cues to action to the perceived susceptibility and perceived severity, while previous studies linked cues to action directly to the use of hearing protection devices (Gilles et al., 2013; Widén, 2013). Likewise, this research linked perceived behavioural control and subjective norm to the behavioural intention, while previous research linked perceived behavioural control and subjective norm directly to the use of hearing protection devices (Degeest et al., 2017a; Gilles et al., 2013; Keppler et al., 2015). Still, several limitations need to be acknowledged while interpreting the results, which will be discussed in the following paragraphs.

7.2.1. Samples

The question is whether the sixteen interview respondents and 157 survey respondents, recruited through convenience sampling, were representative for Dutch young adults between 18 and 30 years old, because of two reasons. First, both samples were relatively small and were overrepresented by female, native Dutch students who already obtained a diploma on an intermediate or high educational level. Second, both samples were prone to self-selection bias, as participation in the interviews and survey was voluntary. Perhaps, respondents who were interested in the topic were more likely to participate than respondents who were not interested (Kumar, 2014).

7.2.2. Interviews

The interview guide was considered as a guideline while conducting the interviews, which meant that questions were removed, rearranged, or reformulated depending on respondents' answers. However, small changes in words and actions, for example using different intonations and asking different probing questions, may already affect responses (Johannes, Crawford & McKinlay, 1997; Kumar, 2014). Furthermore, respondents might have given social desirable answers to some questions, especially because they were in direct contact with the researcher. However, social

desirability bias is not considered as a main issue, because quite some respondents acknowledged for example that they were not performing hearing protection behaviour or that they were not intending to do so.

7.2.3. Survey

The questionnaire was developed, due to the lack of a proper existing measurement instrument addressing hearing protection behaviour, including, but not limited to the use of hearing protection devices. The questionnaire was based on the theoretical framework and contained items derived from the literature as well as items derived from the interviews. The interviews were, for example, used to inform the items measuring the perceived barriers and perceived benefits. Consequently, several scales were new and had not been validated yet. Cronbach's alphas were calculated to check the internal consistencies of the scales. The Cronbach's alphas of the scale measuring the perceived benefits of using hearing protection devices ($\alpha = 0.490$) and the scale measuring the perceived benefits of moving away from speakers ($\alpha = 0.438$) need to be taken into account, because values lower than 0.5 are considered as unacceptable (George & Mallery, 2003). By the way, the scales were not associated with the intention to use hearing protection devices and the intention to move away from speakers.

The percentages of permanent hearing and temporary problems need to be interpreted with caution, because of three reasons. First, the presence of permanent hearing problems were assessed with self-report, and not with pure-tone screening tests. Previous research showed that the percentages of hearing problems based on self-report (14.8%) are higher than the percentages of hearing problems measured with pure-tone hearing screening tests (11.6%) (Karlsmose, Lauritzen, Engberg & Parving, 2000). Pure-tone screening tests are therefore necessary to verify the results. Second, the role of loud music on permanent hearing problems was not clear, as the questions were formulated like: "Do you have permanent hearing loss?" for example, without paying attention to the cause. The percentages of permanent hearing problems are therefore general percentages, including all possible causes. Third, definitions for permanent and temporary hearing problems were not used in this research. Previous research defined permanent hearing problems as "ongoing for 24 hours a day" (e.g. Widén, 2013) and temporary hearing problems as "disappearing within 72 hours after exposure" (e.g. Degeest et al., 2014; Degeest et al., 2017a; Degeest et al., 2017b), in order to prevent overlap in responses between permanent and temporary hearing problems. Narrower definitions of permanent and temporary hearing problems might have led to more accurate percentages.

The drop-out rate was quite high (37.7%), which might be due to the length of the questionnaire. Respondents might have ended the questionnaire, for example, because they became tired or bored (Kumar, 2014; Schmitt & Stuits, 1985). Furthermore, respondents might have given social desirable responses to some questions, but this chance is considered as small. Surveys provide greater anonymity, because respondents are not in direct contact with the researcher (Kumar, 2014). Research also showed that respondents were more likely to provide honest, accurate answers in an online survey than in for example a telephone interview (Amari, Vandebeek, Montgomery, Skarsgard & Ansermino, 2010; Kreuter, Presser & Tourangeau, 2008).

7.3. Recommendations for future research

The survey indicated that the factors accounted between 13.8% and 49.9% of the variation in intention to perform the four types of hearing protection behaviour. The model appeared to fit best to the intention to use hearing protection devices (adjusted $R^2 = 0.499$) and to fit worst to the intention to have hearing check-ups (adjusted $R^2 = 0.138$). Still, 51.1% to 86.2% cannot be explained by the TPB and HBM factors, which leaves room for other factors associated with the intention to perform the four types of hearing protection behaviour. Therefore, it is important that future

research develops and adds more variables to the model. A possible variable is self-identity. Self-identity refers to the degree to which persons think that performing a behaviour is important for their concept of self, that is, their particular societal role (Armitage & Conner, 2001b; Terry, Hogg & White, 1999). An example role may be “someone who cares about health”. A person who identifies with this role, may be more likely to act in accordance with his or her self-concept. Several studies have demonstrated that self-identity accounts for variation in behavioural intention, next to the other TPB factors (Armitage & Conner, 2001b; Terry et al., 1999).

Further research is needed to improve the questionnaire, and especially, to pay attention to the scales with the low Cronbach’s alphas ($\alpha < 0.5$). Cronbach’s alphas will increase when more items are added, because they are dependent on the number of items in the scales (Tavakol, & Dennick, 2011; Tsang, Royse, Terkawi, 2017). Moreover, future research is recommended to include a pilot-test, preferably with a large sample, in order to check the internal consistencies before starting the actual data collection.

The questionnaire included two items to measure the intention and the behaviour of having hearing check-ups. The first item focussed on hearing check-ups provided by professionals, whereas the second item focussed on hearing check-ups provided by the internet. However, the Cronbach’s alphas showed low internal consistencies the scales measuring the intention ($\alpha = 0.431$) and behaviour ($\alpha = 0.484$) regarding having hearing check-ups. Therefore, it is recommended that future research assesses hearing check-ups provided by professionals and hearing check-ups provided by the internet separately. This can also help to identify more specific attitudes and beliefs regarding the two different ways to have hearing check-ups.

Larger samples, preferably with an approximately equal number of males and females, native Dutch and non-native Dutch, students and non-students, and higher educated and lower educated, are required to ensure that the results are generalisable the population at large. Besides, demographic variables, such as gender, ethnic background, professional status, and educational level, are regarded as background factors in the TPB and HBM (Ajzen & Manstead, 2007; Becker & Maiman, 1975). Future research will be able to investigate the link between the different demographic variables and perceived susceptibility and perceived severity, perceived barriers, perceived benefits, perceived behavioural control, and subjective norm, when the proportions are approximately evenly distributed.

Finally, the present research focussed on music venues, because festivals, concerts, discotheques, nightclubs, and parties are often described as the loudest recreational activities (Degeest et al., 2017b) and are often reported as the activities in which most hearing problems occurred (Widén & Erlandsson, 2004). However, young adults are also exposed to loud music through listening to personal listening devices, home stereos, or car radios, being part of a musical group, playing a musical instrument, and exercising in loud fitness classes (Balaney & Kearney, 2015; Beach et al., 2013; Degeest et al., 2017b; Jokitulppo & Bjork, 2002; Keppler et al., 2015; Rawool & Colligon-Wayne, 2008; WHO, 2015a; WHO, 2015b). Future research is recommended to investigate hearing protection behaviour in the other recreational activities as well, because previous studies paid less attention to this.

7.4. Recommendations for practical application

Several stakeholders need to be involved to stimulate young adults to perform hearing protection behaviour. The following recommendations are made, based on the findings of the present research.

Governments Governments are recommended to further optimise existing hearing conservation programmes. The interviews revealed that young adults felt susceptible to hearing problems and

believed in the severity of the consequences. The survey revealed that perceived susceptibility and perceived severity were not associated with the intention to perform any type of hearing protection behaviour. This might explain why hearing conservation programmes – focussing on providing knowledge and raising awareness about the risk involved in loud music exposure and the adverse consequences of hearing problems – were often not effective (Daniel, 2007; Weichbold & Zorowka, 2003; Weichbold & Zorowka, 2007; Zhao et al., 2011). Hearing conservation programmes are therefore recommended to concentrate on hearing protection behaviour as well, next to loud music exposure and hearing problems. The interviews showed that young adults perceived a lot of barriers to perform the four types of hearing protection behaviour. The survey indicated that perceived barriers were significantly negatively associated with the intention to perform three of the four types of hearing protection behaviour. Hearing conservation programmes therefore need to help young adults to overcome, or at least to tolerate, the barriers.

Parents and friends Parents and friends are recommended to play an active role in stimulating young adults to perform hearing protection behaviour. The interviews revealed that young adults can perceive social pressure to perform hearing protection behaviour from their parents and friends. The survey revealed that subjective norm was significantly positively associated with the intention to perform three of the four types of hearing protection behaviour. Parents can create an injunctive norm by recommending young adults to use hearing protection devices, to stay away from speakers, to take listening breaks, and to have hearing check-ups. Friends can create a descriptive norm by using hearing protection, staying away from speakers, taking listening breaks, and having hearing check-ups themselves.

Colleges and workplaces Hearing check-ups are needed to detect and monitor the development of hearing problems from the beginning. The interviews revealed that young adults thought that hearing check-ups were not necessary, because they considered their hearing as good. Respondents also mentioned that hearing check-ups were never offered and that they needed to have the feeling that something was serious. The survey indicated that the perceived barriers were significantly negative associated with the intention to have hearing check-ups. Hearing check-ups need to be easily available in order encourage young adults to have them. Colleges and workplaces are therefore recommended to organise hearing check-ups for their students and employees, for example once a year.

Organisers and managers of music venues Organisers and managers are recommended to provide hearing protection devices at easily accessible and clearly visible locations at music venues (e.g. near the entrance, bar, or toilets). Furthermore, organisers and managers should promote attendees to stay away from the speakers, by keeping distances around the speakers clear, and to take listening breaks, by making areas with no (or low-volume) music available.

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Appendix A: Introduction

Appendix A1: Overview of the recommendations for safe recreational noise exposure

The World Health Organisation (2015b) uses workplace guidelines and standards to estimate safe recreational noise exposure (Table 1). In the workplace, the highest permissible noise exposure is a sound level of 85 dB(A) up to a maximum of eight hours a day (United States Department of Health and Human Services [DHHS], 1998). Permissible noise exposures exceeding the equivalent of 85 dB(A) for eight hours a day, can be calculated by applying the principle that a doubling in sound level requires a halving of exposure time (DHHS, 1998; Scientific Committee on Emerging and Newly Identified Health Risks [SCENIHR], 2008; Śliwińska-Kowalska & Zaborowski, 2017). A doubling in sound level is considered to be an increase of 3 dB(A), as sound levels have a logarithmic scale (DHHS, 1998; SCENIHR, 2008; Śliwińska-Kowalska & Zaborowski, 2017).

Table 1. Permissible sound levels and exposure time (developed by DHHS, 1998)

Sound level (in dB(A))	Exposure time (per day)
85 dB(A)	8 hours
88 dB(A)	4 hours
91 dB(A)	2 hours
94 dB(A)	1 hours
97 dB(A)	30 minutes
100 dB(A)	15 minutes
103 dB(A)	7 minutes and 30 seconds
106 dB(A)	3 minutes and 45 seconds
109 dB(A)	1 minute and 53 seconds
112 dB(A)	56 seconds
115 dB(A)	28 seconds

Appendix A2: Overview of the findings of previous studies

This Appendix provides an overview of the findings of previous quantitative and qualitative studies investigating the use of hearing protection devices, related to the TPB and/or HBM factors (Table 2).

Table 2. Summary of the studies investigating the use of hearing protection devices under the application of the TPB and HBM

Study	Sample	TPB and/or HBM factors	Statistical analysis	Results regarding the TPB and/or HBM factors
Qualitative research				
Beach et al., 2012, Australia	20 respondents (15 males and 5 females between 21 and 30 years, who regularly wore earplugs)	Structured telephone interviews of approximately 21 minutes were conducted. The questions concerned: Perceived susceptibility and perceived severity, perceived barriers and perceived benefits, self-efficacy, and cues to action.	The interviews were transcribed verbatim and content analysis was conducted.	- The respondents believed that hearing problems were serious health problems, and that they were themselves at risk to have hearing problems because of loud noise. The respondents believed that hearing problems impact their lives, particularly on their work performance, ability to communicate, and their music experience. - Respondents named some barriers, such as having an uncomfortable feeling. However, the benefits, such as being protected, outweighed the barriers. - Self-efficacy was a strong theme, because the respondents were confident in their ability to wear earplugs, because they always or almost always wore them. - The main cue that prompted respondents to wear earplugs was personal experience with hearing problems, such as tinnitus or temporary hearing loss.
Quantitative research				
Degeest et al., 2017a, Belgium	527 respondents (210 males and 307 females between 18 and 30 years)	The items concerned*: - Perceived susceptibility (4 items), perceived severity (3 items), perceived benefits (3 items), perceived barriers (4 items), self-efficacy (3 items), social norms (2 items), and behavioural intention (3 items)	- Chi-square tests and independent-samples *t*-tests to evaluate significant differences in the factors between respondents with normal hearing and respondents with hearing loss	None.
Gilles et al., 2013, Belgium	3842 respondents (1807 males and 2035	The items concerned: Perceived susceptibility (6 items, $\alpha = 0.67$), perceived severity (3 items, $\alpha = 0.75$),	- Step-wise logistic regression models to determine which factors were involved in the	- The scores on all the factors were summed. The total score was significantly associated with the use of hearing protection devices (B = -0.120, $p < 0.001$);

Study	Sample	TPB and/or HBM factors	Statistical analysis	Results regarding the TPB and/or HBM factors
	females between 14 and 18 years)	perceived benefits (3 items, α = 0.69), perceived barriers (4 items, α = 0.73), self-efficacy (3 items, α = 0.74), social norms (2 items, α = 0.72), and behavioural intention (3 items, α = 0.67).	dependent variable use of hearing protection devices.	- Temporary tinnitus was significantly associated with the use of hearing protection devices (B = -0.810, $p < 0.004$).
Keppler et al., 2015, Belgium	163 respondents (36 males and 127 females between 18 and 30 years)	The items concerned*: Perceived susceptibility (6 items), perceived severity (3 items), perceived benefits (3 items), perceived barriers (4 items), self-efficacy (3 items), social norms (2 items), and behavioural intention (3 items).	- Chi-square tests to evaluate significant differences in the use of hearing protection devices between respondents who had 'positive' attitudes and beliefs (upper quartile), 'neutral' attitudes and beliefs (two middle quartiles), or 'negative' attitudes and beliefs (lower quartile).	- Significant differences were found for: • Perceived barriers in respondents with a neutral attitude and a positive attitude ($\chi^2 = 6.149$, $p = 0.025$); • Self-efficacy between respondents with a negative and a positive attitude ($\chi^2 = 15.640$, p , 0.001); • Self-efficacy between respondents neutral and a positive attitude ($\chi^2 = 16.733$, $p < 0.001$); • Behavioural intention between respondents with a neutral and a positive attitude ($\chi^2 = 26.741$, $p < 0.001$).
Rawool et al., 2008, United States	238 respondents (40 males, 198 females, who were mostly first year college students)**	The items concerned*: Perceived susceptibility (2 items), perceived severity (2 items), and perceived barriers (1 item).	- Chi-square tests to assess significant differences between males and females - Contingency coefficients to determine the associations between the different items.	- Women (43.59%) were significantly more likely to feel that they do not have to worry about ringing ears than men (43.59%) ($\chi^2 = 10.78$, $p < 0.026$); - Believing that hearing would not be lost until an older age was significantly associated with the lack of experience with hearing loss (contingency coefficient = 0.415, $P = 0.0000$) and ear infections (contingency coefficient = 0.418, $p = 0.000$).
Saunders et al., 2013, United States	235 respondents (117 males and 118 females between 18 and 80 years)	The items concerned: Perceived susceptibility (5 items, α = 0.753), perceived severity (3 items, α = 0.542), perceived benefits (7 items, α = 0.795), perceived barriers (3 items, α = 0.722), and self-efficacy (4 items, α = 0.722).	- Analyses of variance to examine the relationship between the factors and respondents who said 'yes', 'sometimes', or 'no' to using hearing protection devices when engaging in three different noisy activities.	- The three investigated noisy activities were working in noise, using power tools, and attending concerts; - Regarding the activity "attending concerts", significant differences were found for perceived benefits between respondents who said 'yes' and 'no' to using hearing protection devices when attending concerts ($F = 4.04$, $p = 0.021$).

Study	Sample	TPB and/or HBM factors	Statistical analysis	Results regarding the TPB and/or HBM factors
Widén, 2013, Sweden	281 respondents (132 men and 108 women between 15 and 19 years)	The items concerned: Perceived barriers (5 items, α = 0.82), perceived behavioural control (1 item, α = n.a.), social norms (1 item, α = n.a.), and behavioural intention (1 item, α = n.a.).	- Multiple regression analyses to determine which factors were involved in the dependent variables 'attitudes towards noise', 'intention', and 'the use of hearing protection devices'.	- The following variables were significantly associated with intention to use hearing protection devices: • Barriers (β = -0.202, $p < 0.01$); • Social norms (β = -0.334 , $p < 0.001$); • Perceived behavioural control β = -0.202, $p < 0.01$). - The following variables were significantly associated with the use of hearing protection devices: • Barriers (β = -0.306, $p < 0.001$); • Social norms (β = -0.270 , $p < 0.001$); • Perceived behavioural control (β = -0.202, $p < 0.01$); • Tinnitus (β = 0.149, $p < 0.05$); • Noise sensitivity (β = 0.182, $p < 0.01$).

Note: * means that the Cronbach's alphas were not given, ** means that respondents' ages were not presented.

Appendix B: Interviews

Appendix B1: General information about the interview respondents

This Appendix provides an overview of the interview respondents. Their attendance at festivals and concerts, visits to discotheques, nightclubs, and parties, and experience with permanent or temporary hearing problems can be found in Table 3.

Table 3. General information of the interview respondents

Respondent	Gender	Age	Festivals or concerts	Discos, nightclubs or parties	Experienced hearing problems
Respondent 1	Female	23	No	Yes	Yes, temporary hearing loss
Respondent 2	Female	23	Yes	Yes	Yes, temporary tinnitus
Respondent 3	Female	21	Yes	Yes	Yes, temporary tinnitus
Respondent 4	Female	20	Yes	Yes	Yes, permanent tinnitus
Respondent 5	Female	22	Yes	Yes	Yes, temporary tinnitus
Respondent 6	Female	22	Yes	Yes	Yes, temporary tinnitus
Respondent 7	Female	24	Yes	Yes	Yes, temporary tinnitus
Respondent 8	Female	20	Yes	Yes	Yes, temporary tinnitus
Respondent 9	Female	21	No	Yes	Yes, temporary tinnitus
Respondent 10	Female	22	Yes	Yes	Yes, temporary tinnitus
Respondent 11	Male	21	Yes	Yes	Yes, temporary tinnitus
Respondent 12	Female	23	Yes	Yes	Yes, temporary tinnitus
Respondent 13	Female	22	Yes	Yes	Yes, temporary tinnitus
Respondent 14	Female	21	Yes	Yes	Yes, temporary tinnitus
Respondent 15	Male	23	Yes	No	No
Respondent 16	Female	27	Yes	Yes	Yes, temporary tinnitus

Note: Respondent 4 and respondent 16 had part time jobs at festivals or concerts.

Appendix B2: Dutch version of the interview guide

Introductie

- Zeg je naam: Anne Metzelaar
- Zeg dat je een masterstudent Gezondheid en Maatschappij bent aan de Wageningen Universiteit
- Zeg dat je op dit moment bezig met je master thesis
- Zeg waarover jouw thesis gaat: Het nemen van maatregelen voor het beschermen van het gehoor onder Nederlandse jongvolwassenen tussen de 18 en 30 jaar
- Zeg hoe lang het interview gaat duren: Ongeveer 15 minuten
- Vertel de respondenten dat meedoen aan het onderzoek geheel vrijwillig is, dat ze vragen niet hoeven te beantwoorden, en dat ze op elk moment kunnen stoppen met het interview
- Zeg dat er anoniem en vertrouwelijk om zal worden gegaan met de gegeven antwoorden
- Vraag om toestemming om het interview op te nemen

Algemene demografische vragen

- Hoe oud ben je?
- Waar woon je?
- Waar kom je vandaan?
- Wat doe je in het dagelijks leven?

Algemene vragen over het bijwonen van muziekevenementen en het ervaren van gehoorproblemen

- Ben je naar een festival of concert geweest in het afgelopen jaar?
    - *Wanneer de respondent aangeeft dat hij of zij bij een festival of concert is geweest in het afgelopen jaar:* Kun je me een indicatie geven hoe vaak je daar bent geweest in het afgelopen jaar/maand/week?
    - Hoe lang blijf je normaal gesproken in bij een festival of concert?
    - Wat vind je van het volume van de muziek wanneer je bij een festival of concert bent?
- Ben je naar een discotheek, nachtclub, of een feest geweest in het afgelopen jaar?
    - *Wanneer de respondent aangeeft dat hij of zij in een discotheek of nachtclub geweest is in het afgelopen jaar:* Kun je me een indicatie geven hoe vaak je daar bent geweest in het afgelopen jaar/maand/week?
    - Hoe lang blijf je normaal gesproken als je in een discotheek, nachtclub, of feest bent?
    - Wat vind je van het volume van de muziek wanneer je in een discotheek, nachtclub, of feest bent?
- Heb jij wel eens last gehad van tijdelijke gehoorproblemen nadat je een muziekevenement had bezocht, zoals gehoorverlies, een piep in jouw oren, of geluidsovergevoeligheid?
    - *Wanneer een respondent ja zegt:* Kan jij me een indicatie geven hoe vaak je daarvan last hebt gehad? Hoe lang duurde de tijdelijke gehoorproblemen dan meestal?

Specifieke vragen over de *perceived susceptibility* en de *perceived severity* ten opzichte van gehoorproblemen

- Wat is het effect van muziekevenementen op jouw gehoor volgens jou?
- Hoe kwetsbaar ben jij denk je voor gehoorproblemen?
    - *Wanneer een respondent aangeeft dit niet te weten:* Denk je dat je permanente gehoorproblemen kunt hebben op jouw leeftijd? Of denk je dat dit meer iets voor op latere leeftijd?
- Hoe zou jij je voelen als je permanent gehoorproblemen had?
- Wat zijn volgens jou de gevolgen van permanente gehoorproblemen van gehoorproblemen?

    - *Als een respondent aangeeft dit niet te weten:* Wat zijn de gevolgen voor jouw gezondheid? Wat zijn de gevolgen op sociaal gebied, bijvoorbeeld effecten op je familie, je vrienden, of op je werk?
- Denk je dat gehoorproblemen opgelost kunnen worden met medische behandelingen of gehoorapparaten?

Specifieke vragen over andere sociaal cognitieve factoren van de TPB en HBM op de verschillende manieren om het gehoor te beschermen

<u>Het dragen van oordoppen</u>

- Gebruik jij oordoppen als je bij een muziekevenement bent?
    - *Als een respondent ja zegt:* Kan je me een indicatie geven hoe vaak je dat doet?
- Wat zijn voor jouw redenen om wel oordoppen te dragen? Wat zijn voor jouw redenen om geen oordoppen te dragen?

<u>Het vermijden van de geluidsboxen</u>

- Waar ga je altijd het liefst staan, als je bij een muziekevenement bent?
- Vermijd je dichtbij de geluidsboxen te staan?
    - *Als een respondent ja zegt:* Kun je me een indicatie geven hoe vaak je dat doet?
- Wat zijn voor jou redenen om wel de geluidsbox te vermijden? Wat zijn voor jou redenen om niet de geluidsbox te vermijden?

<u>Het nemen van pauzes van het geluid</u>

- Neem je wel eens pauze van het geluid als je bij een muziekevenement bent?
    - *Als een respondent ja zegt:* Kun je me een indicatie geven hoe vaak je dat doet?
- Wat zijn voor jouw redenen om wel pauzes te nemen van het geluid? Wat zijn voor jouw redenen om geen pauzes te nemen voor het geluid?

<u>Het laten checken van het gehoor</u>

- Check jij je gehoor, bijvoorbeeld door naar een (gezondheids)professional te gaan, of door een zelftest op internet te doen?
    - *Als een respondent ja zegt:* Kun je me een indicatie geven hoe vaak je dat doet?
- Wat zijn voor jouw redenen om wel jouw gehoor na te kijken? Wat zijn voor jou redenen om niet jouw gehoor na te kijken?

<u>Perceived behavioural control</u>

- We hebben nu verschillende manieren besproken waarmee je je gehoor kan besproken, zoals oordoppen, vermijden van de geluidsboxen, pauzes nemen, en laten checken. In hoeverre denk jij dat de keuze om jouw gehoor te beschermen, volledig in jouw handen ligt? Waarom (niet)?

<u>Subjectieve norm</u>

- We hebben nu verschillende manieren besproken waarmee je je gehoor kan besproken, zoals oordoppen, vermijden van de geluidsboxen, pauzes nemen, en laten checken. Heb je het gevoel dat anderen in jouw omgeving, zoals vrienden, familieleden, studiegenoten, bezig zijn met het beschermen van hun gehoor op één van de manieren? Waarom (niet)?
- Heb je het gevoel dat anderen, zoals jouw familie, vrienden, studiegenoten of collega's, willen dat jij strategieën gebruikt om jouw gehoor te beschermen? Waarom (niet)?

<u>Intentie</u>

- Stel je voor dat je volgende week of volgende maand naar een muziekevenement toegaat. Denk je dat je je gehoor zult gaan beschermen? Welke strategie zou je dan gaan gebruiken?

Andere manieren om het gehoor te beschermen

- We hebben nu verschillende manieren om je oren te beschermen besproken, zoals oordoppen, vermijden van de geluidsboxen, pauzes nemen, en laten checken. Kun je een andere strategie bedenken, naast de strategieën die wij eerder besproken hebben?

Einde

- Bedank de respondenten voor het meedoen
- Geef de respondenten een kaartje met jouw contactgegevens
- Geef ze een appel, banaan, of chocolaatje als bedankje voor het meedoen

Appendix B3: Quotes interview respondents

The quotes were translated from Dutch to English as precise as possible. Table 4 presents an overview of the original quotes. The quotes are sorted out per respondent.

Table 4. Original Dutch quotes

R1	*"Zelf ga ik daar niet zo vaak heen, dus dan denk ik bij mezelf: "Okee als ik daar af en toe heen ga, dan is dat prima"."*
	"Het is niet dat ik dan een piep in mijn oren hoort, uhm, ja, gewoon dat je dingen iets zachter hoort, denk ik. Soort van gedempt."
	"Dan denk ik: "Okee, ergens, uhm, zou ik dat willen gebruiken", maar dan denk ik van: "Okee misschien versta ik de mensen dan niet meer als die gewoon wat willen zeggen" en (…) ben je in je eentje, op jezelf gefocust."
	"En niet alleen een bas of alleen een gitaar, of iets."
	"Ik denk dat mijn gehoor prima is. Het is niet dat ik denk van: "Oh, ik hoor slechter dan anderen, dus ik ga daarom een test doen"."
R2	*"Totdat de laatste bus teruggaat."*
	"Gewoon totdat ik in slaap van. Dan heb ik er 's ochtends geen last meer van."
	"Ja een gehoorapparaat denk ik misschien. Maar dat ligt er een beetje aan hoe erg de beschadiging is."
	"Maar die vergeet ik sowieso naar feestjes eigenlijk wel altijd. (…) Dan ga je gewoon weg en dan ben je op een feestje en dan denk je: "Ah shit, ze liggen nog op mijn kamer" (…) en "Oh ja (…) ik had ze mee moeten nemen", en dan lig je in bed en dan denk je: "Oh, had ik ze nou maar meegenomen want nu heb ik weer een piep in mijn oor"."
R3	*"Ik heb een nul uren contract, dus ik mag mijzelf inplannen."*
	"Maar je dan zo tien uur staan, als het er niet meer zijn. Maar het kan ook zo vier uur zijn, of zes uur."
	"Ik heb echt het idee dat ze tegenwoordig alles kunnen."
	"Toen ik zelf nog naar festivals ging, en niet voor werk, dan ga je maar één of twee of drie keer per jaar en dan denk je: "Ja die ene keer, dat hoeft dan ook niet"."
	"Het is niet dat het lelijk is ofzo, zal maar zeggen. Ja echt mooi is anders, want ze zijn vaak oranje of blauw ofzo.. Maar ik bedoel het is niet dat mensen zeggen van: "Oh, wat heb jij nou?"."
	"Dat gewoon het gehoor wordt beschermd en dat de muziek gewoon iets minder hard aankomt, waardoor je die piep minder snel krijgt, denk ik."
	"Het is toch een andere beleving denk ik om helemaal vooraan te staan bij een concert of een festival, want je maakt het (…) dan van dichtbij mee. Je kiest die persoon. (…) Als je dan meer achteraan staat dan zie je die persoon helemaal niet."
	"Maar als je er nou zo over nadenkt, denk ik: "Ja, waarom ook niet?", want het is een kleine moeite."
	"Dus ik denk dat ik er wel meer op ga letten, ja. (…) Ja.. Het zit wel meer in mijn hoofd, dat ik denk van: "Oh ja, ik het maar niet zo gemakkelijk nemen van: Zal wel goed komen, en anders doen ze er wel iets aan"."
R4	*"Maar nu heb ik dus eigenlijk standaard een piep in mijn oren die niet meer weggaat ook."*
	"Ik denk dat ik zo'n elke twee weken heb ik wel iets waarbij ik het zou moeten dragen, en ik het bijna altijd dan ook draag, zal ik maar zeggen."
	"Ik wil ook niet vragen zo van: "Jongens, we gaan nu allemaal achteraan staan". Terwijl nu iedereen iets heeft van: "Nee we willen daar staan". Dus soms is het lastig omdat je ook gewoon rekening moet houden met andere mensen die er blijkbaar geen last van hebben."
R5	*"Dan moet je alles drie keer vragen aan iedereen, en dan voel je je toch een beetje een last ofzo, voor andere mensen. Dat zou ik niet leuk vinden, en dan voel je je toch minder op jouw gemak."*

"Dus dan zou ik misschien liever naar een audicien gaan, maar goed, dan moet ik ook wel het gevoel hebben dat er echt serieus iets is, daar ga je natuurlijk niet zomaar heen."

"Als de muziek heel hard staat, dan kan ik (...) me eroverheen zetten zo van: "Ja, okee het is zo", maar er zijn ook wel mensen die dan echt weggaan of niet meer terug willen."

R6 *"Ik vergeet gewoon de hele tijd om oordoppen te kopen. Iedere keer als ik dan op een feestje ben, dan denk ik: "Ah, nee geen oordoppen". Dan ben je er al, en dan denk je: "Ah okee, volgende keer" en dan vergeet ik het weer."*

"Ik loop wel eens weg naar buiten (…) om even met iemand te praten. Binnen moet je ook nog naar elkaar schreeuwen, dat doet ook wel best wel pijn in mijn oren."

"Uhm, nou ja het kan wel. Maar niet per se.. Ik denk niet over na om even een pauze te nemen. Als het binnen gewoon leuk is, dan blijf ik gewoon binnen staan."

R7 *"Uhm, nee ik voel niet echt die druk. Het zou meer vanuit mijzelf komen dan. Ja. Nooit dat iemand het tegen mij gezegd heeft."*

R8 *"Niet per se luiheid, maar meer dat ik er gewoon (…) niet zoveel over nadenk."*

"Maar dat is niet per se de reden waarom ik het niet doe, hoor. Het is meer een dingetje wat er ook nog bij is zeg maar."

"Uhm, ik denk niet dat ze dat echt actief zullen zeggen, maar ik denk wel dat ze het goed zouden vinden als ik het wel zou doen, zeg maar."

R9 *"Als je daar dan staat, met andere mensen ofzo, dan denk ik dat ik het lastig zou vinden om het aan te geven van: "Jongens, zullen we..", zeker als zij wel heel graag vooraan staan en minder moeite lijken te hebben met de geluidsbox, dan zou het wel lastig kunnen worden omdat ik dat dan niet durf te zeggen."*

R10 *"Het is niet zo dat ik me ervoor schaam als ik ze draag. Ik vind het niet erg."*

"Ik neem altijd mijn oordopjes mee."

"Ik heb zelfs een keer een tampon uit elkaar getrokken om die in mijn oren te doen (…) maar dan valt het er weer uit."

R11 *"Ja, ik heb van die (…) hele goedkope. Die je dan erin moet stoppen, en die dan uit moeten zetten, maar bij mij gaat dat dan pijn doen in mijn oor, ofzo, en dan vallen ze gelijk weer uit. Van die universele (…) die gewoon uitvallen en vervelend zitten."*

"Ja, ze zien er ook verschrikkelijk uit, maar dat vind ik niet een heel groot probleem, omdat het gewoon normaal is dat je oordoppen in hebt."

"Maar meestal ga je dan je plek niet veranderen, omdat je dan perfect staat in een crowd ofzo (…) en je toch wel je goede plek behouden. Je kan op zich wel verhuizen, maar je wil ook niet je goede plek kwijt."

"Ik vind het sowieso ook altijd heel slim met oortjes dat je op je telefoon kunt zien wanneer het te hard gaat. Daar maak ik ook wel gebruik van."

R12 *"Uhm, ik denk, omdat je er wel een beetje onzeker van wordt, omdat je dus zo vaak aan mensen moet vragen van: "Oh, wat zeg je nou?", misschien ga je dan denken van: "Oh, anderen worden daar een beetje moe van"."*

"Ja, dat was echt niet fijn. Nee, ik ben heel blij dat ik weer normaal kan horen."

"Maar ik weet eigenlijk niet waarom ik ze dan niet naar studentenfeestjes draag. Dat is denk ik puur uit gemak."

"Maar toen ik ze eruit haalde, had ik echt het gevoel dat er zo'n druk zo.. Nee, het voelde alsof ze erin hadden gezeten zeg maar."

"Ik dacht van: "Wow". Ik had toch wel het gevoel dat ze toch wel wat hadden beschermd."

"Omdat er teveel mensen om je heen staan, dat je je niet kunt verplaatsen.. Ja, je kunt je wel verplaatsen, maar je moet wel even.. Ja het is lastig daar."

"Je wil gewoon weten of het goed zit of niet, en als het niet goed zit, ja, dan ben ik misschien wel zo iemand die daar iets aan wil doen. Maar als het goed zit, dan ben ik daar blij mee."

"Mijn moeder is sowieso altijd bezorgd over alles. Maar ja, als ik zeg dat ik naar zo'n evenement ga, zegt ze: "Ja, doe je wel voorzichtig". Ik weet niet of ze zou zeggen dat ik oordoppen moet dragen, maar wel dat ik rustig aan moet doen."

R13 *"Maar het ligt er denk ik ook een beetje aan het soort muziek. Dus als het, uhm, rock is, of gewoon klassiek.."*

"Uhm, ja, misschien ook een (…) soort van schaamte ofzo, ik bedoel, als je van die opvallende dingen in je oren hebt (…) dat je je toch een beetje een loser voelt ofzo."

"Bij een concert ben je natuurlijk wel gebonden aan pauzes. Dus, uhm, want met festivals, dan kun je natuurlijk zelf een beetje vrij rondlopen om te bepalen wat je wil gaan doen, maar bij een concert is het natuurlijk wat meer.. Ja, programma zeg maar."

"Ik zie af en toe ook wel mensen oordopjes dragen op festivals en als je gaat stappen, uhm, maar er zijn ook tegelijk nog ook heel veel mensen die dat niet doen. Voor mijn gevoel is het niet een vaste gewoonte ofzo (..) of een automatisme ofzo. Ik denk dat er nog wel heel veel te winnen valt."

"Uhm, het zou wel goed zijn.. Uhm, maar ik betwijfel een beetje of ik dat in de praktijk ook echt ga doen."

"Je hoort er ook nog niet zoveel over in de media ofzo. (…) Bij mij leeft het onderwerp niet zo, zeg maar, (…) en dat is ook de reden dat ik dat vergeet. (…) Als daar ook in de media wat meer aandacht aan geschonken zou worden, dan zou dat hele onderwerp misschien (…) de aandacht krijgen die het eigenlijk ook wel verdiend."

R14 *"Ja, omdat ik dus ook dat vriendinnetje heb, die echt die piep heeft, en (…) daar word je toch wel een beetje mee geconfronteerd ofzo, want zij gaat echt nooit meer naar een feestje, omdat ze daar gewoon echt bang voor is dat dat dan weer terug komt."*

R15 *"Ik ga niet zo vaak dat ik daar last van heb."*

"Uhm, en het voelt wel een beetje dubbel, als (…) je gaat naar concerten voor de muziek, en als je dan oordoppen in hebt, dan (…) lijkt het bijvoorbeeld alsof je eigenlijk toch niet wil."

"Nee, dat zou ik niet doen. (…) Nee, daar schaam ik me voor."

"Dat het gewoon even te druk wordt op je hoofd, door al het geluid. Ja, (..) waar je dan even uit weg wil (…) anders kan je misschien in paniek raken."

R16 *"Zeker als je heel vaak naar plekken gaat waar super harde muziek is, en je je oren niet beschermd, ik denk dat je dat dan wel op jonge leeftijd gehoorproblemen kan krijgen."*

"En dan denk ik van: "Oh, het lijkt mij heel naar als, als je echt, uhm, permanent die problemen zou hebben"."

"Op het moment dat ik echt denk van: "Oh, dit doet pijn aan mijn oren", denk ik nu ook: "Oh, dat betekent dat het dan echt te hard is, dus ik moet verder weg staan"."

"Maar ik heb ze nu wel bijna altijd in mijn tas zitten."

"Ja, het moment als iemand die dan indoet, dan word je er zelf ook wel even aan herinnerd van: "Oh, ja, oordoppen, goed idee"."

Appendix C: Questionnaire

Beste deelnemer,

Ik doe een onderzoek voor mijn master studie Health and Society aan de Wageningen Universiteit. Mijn onderzoek gaat over het nemen van maatregelen voor het beschermen van het gehoor onder Nederlandse jongvolwassenen tussen de 18 en 30 jaar op muziekevenementen (zoals festivals, concerten, discotheken, nachtclubs, en feesten).

Deze vragenlijst is opgedeeld in vier verschillende onderdelen. Je krijgt een aantal algemene vragen in het eerste onderdeel; een aantal vragen over jouw bezoek aan muziekevenementen in het tweede onderdeel; een aantal stellingen over het beschermen van het gehoor in het derde onderdeel; en een aantal vragen over jouw gehoor in het vierde onderdeel. Je kunt doorgaan naar de volgende vragen of stellingen als je op de knop (>>) klikt. Je kunt eventueel ook terug gaan naar de vorige vragen of stellingen als je op de knop (<<) klikt.

Onthoud tijdens het invullen van de vragenlijst dat er geen goede of foute antwoorden zijn. Ik ben geïnteresseerd in jouw mening! Het duurt ongeveer 10 minuten om de vragenlijst in te vullen.

Je kunt aan het einde van de vragenlijst jouw email adres invullen als je kans wilt maken op één van de twee Bol.com-bonnen van 10 euro. Deelname aan de loting is natuurlijk niet verplicht.

<u>Om mee te mogen doen aan dit onderzoek, moet je</u>
1. Nederlands spreken;
2. Tussen de 18 en 30 jaar oud zijn;
3. En minstens één keer een muziekevenement bezocht hebben de afgelopen 12 maanden.

Deelname aan dit onderzoek is vrijwillig. Jouw gegevens zullen anoniem verwerkt worden en zullen niet gebruikt worden voor andere doeleinden. Je kunt zonder opgaaf van redenen de vragenlijst voortijdig afbreken, zonder dat dit enige consequenties voor je heeft.

Mocht je een vraag hebben over dit onderzoek, dan kun je te allen tijde contact met mij opnemen, door een mail te sturen naar: anne.metzelaar@wur.nl.

Ik hoop je hiermee voldoende geïnformeerd te hebben. Jouw deelname wordt zeer gewaardeerd!

Door op "Ja" te klikken, geef je aan dat je het bovenstaande gelezen hebt en verklaar je akkoord te gaan met deelname aan dit onderzoek. Daarna kun je op de knop (>>) klikken om door te gaan naar de eerste vragen.

◯ Ja, ik heb bovenstaande gelezen en verklaar akkoord te gaan met deelname aan dit onderzoek

Eerste onderdeel
Dit is het eerste onderdeel van de vragenlijst. Er worden een aantal algemene vragen gesteld.

1. Wat is jouw geslacht?
◯ Man
◯ Vrouw
◯ Anders, namelijk ☐

2. Hoe oud ben jij?

◯ 18 ◯ 20 ◯ 22 ◯ 24 ◯ 26 ◯ 28 ◯ 30
◯ 19 ◯ 21 ◯ 23 ◯ 25 ◯ 27 ◯ 29

3. Wat is jouw afkomst?

◯ Nederlands
◯ Turks
◯ Marokkaans
◯ Surinaams
◯ Antilliaans
◯ Anders, namelijk ☐

4. Wat doe je in het dagelijks leven? Selecteer wat je de meeste tijd doet.

◯ Ik studeer
◯ Ik werk in loondienst
◯ Ik ben zelfstandig ondernemer
◯ Ik ben huisman of huisvrouw
◯ Ik ben werkloos

5. Wat is jouw hoogst afgeronde opleiding?

◯ Basisschool
◯ VMBO
◯ MAVO
◯ HAVO
◯ VWO
◯ MBO
◯ HBO
◯ Universiteit bachelor
◯ Universiteit master

Tweede onderdeel

Dit is het tweede onderdeel van de vragenlijst. Er worden een aantal vragen voorgelegd over jouw bezoek aan muziekevenementen.

1. Ben jij naar een **festival** of een **concert** geweest in de afgelopen 12 maanden?

◯ Ja
◯ Nee

Wanneer een respondent "Ja" antwoordde, werd hij of zij verwezen naar vraag 2. Wanneer een respondent "Nee" antwoordde, werd hij of zij verwezen naar vraag 4.

2. Hoe vaak ben jij ongeveer naar een **festival** of een **concert** geweest in de afgelopen 12 maanden?

◯ Ongeveer 1 keer in het jaar
◯ Ongeveer 1 keer in de 6 maanden
◯ Ongeveer 1 keer in de 4 maanden
◯ Ongeveer 1 keer in de 3 maanden
◯ Ongeveer 1 keer in de 2 maanden
◯ Ongeveer 1 keer in de maand
◯ Ongeveer 1 keer in de 2 weken
◯ Ongeveer 1 keer in week
◯ Vaker dan 1 keer in de week

3. Wat vind je in het algemeen van het volume van de muziek op een **festival** of bij een **concert**?

◯ Te zacht
◯ Zacht
◯ Goed

◯ Hard
◯ Te hard

4. Ben jij naar een **discotheek,** een **nachtclub,** of een **feest** geweest in de afgelopen 12 maanden?
◯ Ja
◯ Nee
Wanneer een respondent "Ja" antwoordde, werd hij of zij verwezen naar vraag 5. Wanneer een respondent "Nee" antwoordde, werd hij of zij verwezen naar het volgende deel van de vragenlijst.

5. Hoe vaak ben jij ongeveer naar een **discotheek**, een **nachtclub**, of een **feest** geweest in de afgelopen 12 maanden?
◯ Ongeveer 1 keer in het jaar
◯ Ongeveer 1 keer in de 6 maanden
◯ Ongeveer 1 keer in de 4 maanden
◯ Ongeveer 1 keer in de 3 maanden
◯ Ongeveer 1 keer in de 2 maanden
◯ Ongeveer 1 keer in de maand
◯ Ongeveer 1 keer in de 2 weken
◯ Ongeveer 1 keer in week
◯ Vaker dan 1 keer in de week

6. Wat vind je in het algemeen van het volume van de muziek in een **discotheek,** een **nachtclub,** of een **feest**?
◯ Te zacht
◯ Zacht
◯ Goed
◯ Hard
◯ Te hard

Derde onderdeel

Dit is het derde onderdeel van de vragenlijst. Vanaf nu zullen festivals, concerten, discotheken, nachtclubs, en feesten **muziekevenementen** genoemd worden. In dit onderdeel krijg je een aantal stellingen te zien, waarbij je gevraagd wordt om aan te geven in hoeverre je het oneens of eens bent met deze stellingen.

Een aantal stellingen gaan over gehoorproblemen. Gehoorverlies, tinnitus, en geluidsovergevoeligheid zijn voorbeelden van gehoorproblemen. Mensen met tinnitus horen piepende, zoemende, of suizende geluiden in één of beide oren, zonder een externe geluidsbron. De geluiden komen dus niet van buitenaf - maar van binnenuit. Mensen met geluidsovergevoeligheid hebben moeite met het verdragen van alledaagse geluiden.

Lees elke stelling en geef aan in hoeverre je het oneens of eens bent.

	Zeer oneens	Oneens	Beetje oneens	Neutraal	Beetje eens	Eens	Zeer eens
1. Ik denk dat ik muziekevenementen kan bijwonen, zonder dat het schade toebrengt aan mijn gehoor	◯	◯	◯	◯	◯	◯	◯
2. Ik geloof dat mijn oren uiteindelijk gewend raken aan lawaai, waardoor ze dus minder snel beschadigd zullen raken door lawaai	◯	◯	◯	◯	◯	◯	◯
3. Ik geloof dat blootstelling aan harde muziek mijn gehoor kan beschadigen	◯	◯	◯	◯	◯	◯	◯

4. Ik denk dat het mogelijk is voor mensen van mijn leeftijd om gehoorproblemen te hebben	◯	◯	◯	◯	◯	◯	◯
5. Gehoorproblemen komen alleen voor bij mensen met een oudere leeftijd	◯	◯	◯	◯	◯	◯	◯

Lees elke stelling en geef aan in hoeverre je het oneens of eens bent.

	Zeer oneens	Oneens	Beetje oneens	Neutraal	Beetje eens	Eens	Zeer eens
1. Ik denk dat het heel belangrijk is om goed te kunnen horen	◯	◯	◯	◯	◯	◯	◯
2. Ik denk dat ik niet veel problemen zou hebben als ik niet goed zou kunnen horen	◯	◯	◯	◯	◯	◯	◯
3. Ik zou het heel vervelend vinden om nu gehoorproblemen te hebben	◯	◯	◯	◯	◯	◯	◯
4. Gehoorproblemen maken het lastiger om te communiceren	◯	◯	◯	◯	◯	◯	◯
5. Gehoorproblemen zullen mijn vaardigheden op studie of werk belemmeren	◯	◯	◯	◯	◯	◯	◯
6. Gehoorproblemen zullen mijn sociale activiteiten belemmeren	◯	◯	◯	◯	◯	◯	◯
7. Ik denk dat gehoorproblemen opgelost kunnen worden door middel van gehoortoestellen	◯	◯	◯	◯	◯	◯	◯
8. Ik denk dat gehoorproblemen genezen kunnen worden door middel van een medische ingreep	◯	◯	◯	◯	◯	◯	◯

Lees de stelling en geef aan in hoeverre je het oneens of eens bent.

	Zeer oneens	Oneens	Beetje oneens	Neutraal	Beetje eens	Eens	Zeer eens
Ik draag altijd oordoppen op muziekevenementen	◯	◯	◯	◯	◯	◯	◯

Lees elke stelling en geef aan in hoeverre je het oneens of eens bent.

	Zeer oneens	Oneens	Beetje oneens	Neutraal	Beetje eens	Eens	Zeer eens
1. Ik heb er nooit aan gedacht om oordoppen te dragen	◯	◯	◯	◯	◯	◯	◯
2. Ik denk dat het niet nodig is om oordoppen te dragen	◯	◯	◯	◯	◯	◯	◯
3. Oordoppen zorgen ervoor dat de muziek wat minder hard aankomt	◯	◯	◯	◯	◯	◯	◯
4. Ik ben overtuigd dat ik oordoppen kan dragen op muziekevenementen	◯	◯	◯	◯	◯	◯	◯
5. Ik vind het makkelijk om oordoppen te dragen op muziekevenementen	◯	◯	◯	◯	◯	◯	◯
6. Ik denk dat oordoppen oncomfortabel zijn om te dragen	◯	◯	◯	◯	◯	◯	◯

7. Ik denk dat ik druk voel op mijn oren als ik oordoppen draag	◯	◯	◯	◯	◯	◯	◯
8. Mijn oren worden beschermd als ik oordoppen draag	◯	◯	◯	◯	◯	◯	◯
9. De beslissing om oordoppen te dragen op muziekevenementen ligt buiten mijn macht	◯	◯	◯	◯	◯	◯	◯
10. Het is niet helemaal aan mij of ik oordoppen draag op muziekevenementen	◯	◯	◯	◯	◯	◯	◯
11. Ik denk dat oordoppen mijn vermogen om te communiceren met anderen aantasten	◯	◯	◯	◯	◯	◯	◯
12. Ik denk dat ik de muziek minder goed kan horen als ik oordoppen draag	◯	◯	◯	◯	◯	◯	◯
13. Ik vergeet steeds om oordoppen mee te nemen of om oordoppen te kopen	◯	◯	◯	◯	◯	◯	◯
14. Oordoppen zorgen ervoor dat gehoorbeschadiging beperkt wordt	◯	◯	◯	◯	◯	◯	◯
15. Ik schaam mij ervoor om oordoppen te dragen	◯	◯	◯	◯	◯	◯	◯
16. Ik denk dat oordoppen mij er minder goed uit laten zien	◯	◯	◯	◯	◯	◯	◯
17. Ik heb er vaak geen zin in om oordoppen te dragen	◯	◯	◯	◯	◯	◯	◯
18. Oordoppen zorgen ervoor dat ik geen piep, zoem, of suis meer in mijn oren heb na het muziekevenement	◯	◯	◯	◯	◯	◯	◯

Lees de stelling en geef aan in hoeverre je het oneens of eens bent.

	Zeer oneens	Oneens	Beetje oneens	Neutraal	Beetje eens	Eens	Zeer eens
Ik vermijd altijd de speakers op muziekevenementen	◯	◯	◯	◯	◯	◯	◯

Lees elke stelling en geef aan in hoeverre je het oneens of eens bent.

	Zeer oneens	Oneens	Beetje oneens	Neutraal	Beetje eens	Eens	Zeer eens
1. Ik heb er nooit aan gedacht om speakers te vermijden	◯	◯	◯	◯	◯	◯	◯
2. Ik denk niet dat het nodig is om speakers te vermijden	◯	◯	◯	◯	◯	◯	◯
3. Ik sta soms dichtbij speakers, omdat ik de show graag van dichtbij wil zien	◯	◯	◯	◯	◯	◯	◯
4. Ik sta soms dichtbij de speakers, omdat ik graag mijn goede plek wil behouden	◯	◯	◯	◯	◯	◯	◯
5. Het volume van de muziek is zachter wanneer ik verder weg van de speakers sta	◯	◯	◯	◯	◯	◯	◯

6. Ik ben ervan overtuigd dat ik de speakers kan vermijden op muziekevenementen	◯	◯	◯	◯	◯	◯	◯
7. Ik vind het makkelijk om de speakers te vermijden op muziekevenementen	◯	◯	◯	◯	◯	◯	◯
8. Ik sta soms dichtbij de speakers, omdat het te druk is om te verplaatsen	◯	◯	◯	◯	◯	◯	◯
9. Ik sta soms dichtbij de speakers, omdat anderen, met wie ik het muziekevenement bezoek, bij de speakers staan	◯	◯	◯	◯	◯	◯	◯
10. Mijn oren doen minder pijn als ik verder weg van de speakers sta	◯	◯	◯	◯	◯	◯	◯
11. Ik heb er vaak geen zin om de speakers te vermijden	◯	◯	◯	◯	◯	◯	◯
12. De kwaliteit van de muziek is beter als je verder van de speakers af staat	◯	◯	◯	◯	◯	◯	◯
13. De beslissing om de speakers te vermijden op muziekevenementen ligt buiten mijn macht	◯	◯	◯	◯	◯	◯	◯
14. Het is niet helemaal aan mij of ik de speakers vermijd op muziekevenementen	◯	◯	◯	◯	◯	◯	◯

Lees elke stelling en geef aan in hoeverre je het oneens of eens bent.

	Zeer oneens	Oneens	Beetje oneens	Neutraal	Beetje eens	Eens	Zeer eens
Ik neem altijd bewust een korte pauze van het geluid op muziekevenementen	◯	◯	◯	◯	◯	◯	◯

Lees elke stelling en geef aan in hoeverre je het oneens of eens bent.

	Zeer oneens	Oneens	Beetje oneens	Neutraal	Beetje eens	Eens	Zeer eens
1. Ik heb er nooit aan gedacht om pauzes te nemen van het geluid op muziekevenementen	◯	◯	◯	◯	◯	◯	◯
2. Ik denk niet dat het nodig is om pauzes te nemen van het geluid op muziekevenementen	◯	◯	◯	◯	◯	◯	◯
3. Ik neem soms geen pauze van het geluid, omdat ik graag mijn goede plek wil behouden	◯	◯	◯	◯	◯	◯	◯
4. Ik vind het fijn om soms even weg te zijn van de muziek, en daarom neem ik een pauze van het geluid	◯	◯	◯	◯	◯	◯	◯
5. Ik ben ervan overtuigd dat ik pauzes van het geluid kan nemen op muziekevenementen	◯	◯	◯	◯	◯	◯	◯
6. Ik vind het makkelijk om pauzes van het geluid te nemen op muziekevenementen	◯	◯	◯	◯	◯	◯	◯

7. Ik heb er vaak geen zin om pauzes van het geluid te nemen op muziekevenementen	◯	◯	◯	◯	◯	◯	◯
8. Ik vind het fijn dat mijn oren even tot rust kunnen komen als ik pauzes neem van het geluid	◯	◯	◯	◯	◯	◯	◯
9. Ik neem soms geen pauzes van het geluid, omdat ik afhankelijk ben van het programma en ik niets wil missen	◯	◯	◯	◯	◯	◯	◯
10. Ik neem soms geen pauzes van het geluid, omdat anderen, met wie ik het muziekevenement bezoek, dat niet willen	◯	◯	◯	◯	◯	◯	◯
11. De beslissing of ik pauzes neem van het geluid op muziekevenementen ligt buiten mijn macht	◯	◯	◯	◯	◯	◯	◯
12. Het is niet helemaal aan mij of ik pauzes van het geluid neem op muziekevenementen	◯	◯	◯	◯	◯	◯	◯

Lees elke stelling en geef aan in hoeverre je het oneens of eens bent.

	Zeer oneens	Oneens	Beetje oneens	Neutraal	Beetje eens	Eens	Zeer eens
Ik kijk ieder jaar mijn oren na door naar een (gezondheids)professional te gaan	◯	◯	◯	◯	◯	◯	◯
Ik kijk ieder jaar mijn oren na door een zelftest op internet te doen	◯	◯	◯	◯	◯	◯	◯

Lees elke stelling en geef aan in hoeverre je het oneens of eens bent.

	Zeer oneens	Oneens	Beetje oneens	Neutraal	Beetje eens	Eens	Zeer eens
1. Ik heb er nooit aan gedacht om mijn oren na te (laten) kijken	◯	◯	◯	◯	◯	◯	◯
2. Ik denk niet dat het nodig is om mijn oren na te (laten) kijken	◯	◯	◯	◯	◯	◯	◯
3. Ik ben nieuwsgierig hoe goed of slecht ik kan horen	◯	◯	◯	◯	◯	◯	◯
4. Ik ben ervan overtuigd dat ik mijn gehoor kan (laten) nakijken	◯	◯	◯	◯	◯	◯	◯
5. Ik vind het makkelijk om mijn gehoor te (laten) nakijken	◯	◯	◯	◯	◯	◯	◯
6. Ik moet het gevoel hebben dat ik serieus gehoorproblemen heb, voordat ik mijn gehoor ga (laten) nakijken	◯	◯	◯	◯	◯	◯	◯
7. Ik ben bang voor het resultaat als ik mijn oren ga (laten) nakijken	◯	◯	◯	◯	◯	◯	◯
8. Ik moet zelf het initiatief nemen om mijn gehoor te (laten) nakijken, omdat gehoortesten niet worden aangeboden	◯	◯	◯	◯	◯	◯	◯
9. Ik denk dat gehoorproblemen in een vroeg stadium ontdekt kunnen	◯	◯	◯	◯	◯	◯	◯

worden, wanneer ik mijn gehoor ga (laten) nakijken							
10. De beslissing om mijn oren na (te) laten kijken ligt buiten mijn macht	◯	◯	◯	◯	◯	◯	◯
11. Het is niet helemaal aan mij of ik mijn oren ga (laten) nakijken	◯	◯	◯	◯	◯	◯	◯

Er zijn nu verschillende manieren om het gehoor te beschermen aan bod gekomen, zoals het dragen van oordoppen, het vermijden van de speakers, het nemen van pauzes van het geluid, en het (laten) nakijken van het gehoor. Geef aan in hoeverre je het met de stellingen oneens of eens bent.

	Zeer oneens	Oneens	Beetje oneens	Neutraal	Beetje eens	Eens	Zeer eens
1. Mijn familie beschermt hun gehoor	◯	◯	◯	◯	◯	◯	◯
2. Mijn familie denkt dat het belangrijk is dat ik mijn gehoor bescherm	◯	◯	◯	◯	◯	◯	◯
3. Ik wil graag voldoen aan de meningen van mijn familie	◯	◯	◯	◯	◯	◯	◯
4. Mijn vrienden beschermen hun gehoor	◯	◯	◯	◯	◯	◯	◯
5. Mijn vrienden denken dat het belangrijk is dat ik mijn gehoor bescherm	◯	◯	◯	◯	◯	◯	◯
6. Ik wil graag voldoen aan de meningen van mijn vrienden	◯	◯	◯	◯	◯	◯	◯
7. Mijn medestudenten/collega's beschermen hun gehoor	◯	◯	◯	◯	◯	◯	◯
8. Mijn medestudenten/collega's denken dat het belangrijk is dat ik mijn gehoor bescherm	◯	◯	◯	◯	◯	◯	◯
9. Ik wil graag voldoen aan de meningen van mijn medestudenten/collega's	◯	◯	◯	◯	◯	◯	◯
10. (Gezondheids)professionals denken dat het belangrijk is dat ik mijn gehoor bescherm	◯	◯	◯	◯	◯	◯	◯
11. Als het gaat om gezondheid, wil ik graag datgene doen wat (gezondheids)professionals denken	◯	◯	◯	◯	◯	◯	◯

Lees elke stelling en geef aan in hoeverre je het oneens of eens bent.

	Zeer oneens	Oneens	Beetje oneens	Neutraal	Beetje eens	Eens	Zeer eens
1. Ik ben van plan om de volgende keer oordoppen te gaan dragen op een muziekevenement	◯	◯	◯	◯	◯	◯	◯
2. Ik ben van plan om de volgende keer de speakers te vermijden op een muziekevenement	◯	◯	◯	◯	◯	◯	◯
3. Ik ben van plan om de volgende keer bewust een korte pauze te nemen van het geluid op een muziekevenement	◯	◯	◯	◯	◯	◯	◯

4. Ik ben van plan om jaarlijks mijn gehoor na te kijken door naar een (gezondheids)professional te gaan	◯	◯	◯	◯	◯	◯	◯
5. Ik ben van plan om jaarlijks mijn gehoor na te kijken door een zelftest op internet te doen	◯	◯	◯	◯	◯	◯	◯

1. Heb je iets gehoord, gelezen, of gezien in de media over harde muziek en de mogelijke gevolgen daarvan voor het gehoor?
◯ Ja
◯ Nee
Wanneer een respondent "Ja" antwoordde, werd hij of zij verwezen naar vraag 2. Wanneer een respondent "Nee" antwoordde, werd hij of zij verwezen naar vraag 3.

2. Wat heb je gehoord, gelezen, of gezien in de media, over harde muziek en de mogelijke gevolgen daarvan voor het gehoor?

3. Ken jij iemand die permanent last heeft van gehoorproblemen, door blootstelling aan hard geluid?
◯ Ja
◯ Nee
Wanneer een respondent "Ja" antwoordde, werd hij of zij verwezen naar vraag 4. Wanneer een respondent "Nee" antwoordde, werd hij of zij verwezen naar het volgende deel van de vragenlijst.

4. Wie ken jij die permanent last heeft van gehoorproblemen, door blootstelling aan hard geluid?
◯ Mijn vader
◯ Mijn moeder
◯ Mijn partner
◯ Een vriend of vriendin
◯ Een college of studiegenoot
◯ Anders, namelijk

Vierde onderdeel

Dit is het vierde onderdeel van de vragenlijst. Er worden een aantal vragen voorgelegd over jouw gehoor.

1. Heb jij **permanent** last van gehoorverlies?
◯ Ja
◯ Nee
Wanneer een respondent "Nee" antwoordde, werd hij of zij verwezen naar vraag 2. Wanneer een respondent "Ja" antwoordde, werd hij of zij verwezen naar vraag 4.

2. Hoe vaak heb jij **tijdelijk** last gehad van gehoorverlies na een bezoek aan een muziekevenement?
◯ Nooit
◯ Zelden
◯ Soms
◯ Vaak
◯ Altijd

Wanneer een respondent "Zelden", "Soms", "Vaak", of "Altijd" antwoordde, werd hij of zij verwezen naar vraag 3. Wanneer een respondent "Nooit" antwoordde, werd hij of zij verwezen naar vraag 4.

3. Hoe lang duurde het **tijdelijk** gehoorverlies na een bezoek aan een muziekevenement?
◯ Minder dan dertig minuten
◯ Tussen dertig minuten en twee uur
◯ Tussen twee uur en zes uur
◯ Tussen zes uur en één dag
◯ Meer dan één dag

4. Heb jij **permanent** last van tinnitus*?
* Tinnitus is het horen van piepende, zoemende, of sissende geluiden. Deze geluiden komen niet van buitenaf – maar van binnenuit.
◯ Ja
◯ Nee
Wanneer een respondent "Nee" antwoordde, werd hij of zij verwezen naar vraag 5. Wanneer een respondent "Ja" antwoordde, werd hij of zij verwezen naar vraag 7.

5. Hoe vaak heb jij **tijdelijk** last gehad van tinnitus* na een bezoek aan een muziekevenement?
* Tinnitus is het horen van piepende, zoemende, of sissende geluiden. Deze geluiden komen niet van buitenaf – maar van binnenuit.
◯ Nooit
◯ Zelden
◯ Soms
◯ Vaak
◯ Altijd
Wanneer een respondent "Zelden", "Soms", "Vaak", of "Altijd" antwoordde, werd hij of zij verwezen naar vraag 6. Wanneer een respondent "Nooit" antwoordde, werd hij of zij verwezen naar vraag 7.

6. Hoe lang duurde de **tijdelijke** tinnitus na een bezoek aan een muziekevenement?
◯ Minder dan dertig minuten
◯ Tussen de dertig minute en twee uur
◯ Tussen twee uur en zes uur
◯ Tussen zes uur en één dag
◯ Meer dan één dag

7. Heb jij **permanent** moeite met het verdragen van alledaagse geluiden waarvan je denkt dat de meeste mensen deze wel kunnen verdragen?
◯ Ja
◯ Nee
Wanneer een respondent "Nee" antwoordde, werd hij of zij verwezen naar vraag 8. Wanneer een respondent "Ja" antwoordde, werd hij of zij verwezen naar het volgende deel van de vragenlijst.

8. Hoe vaak heb jij **tijdelijk** last gehad van geluidsovergevoeligheid* na een bezoek aan een muziekevenement?
* Geluidsovergevoeligheid is het moeite hebben met het verdragen van alledaagse geluiden.
◯ Nooit
◯ Zelden
◯ Soms
◯ Vaak
◯ Altijd

Wanneer een respondent "Zelden", "Soms", "Vaak", of "Altijd" antwoordde, werd hij of zij verwezen naar vraag 9. Wanneer een respondent "Nooit" antwoordde, werd hij of zij verwezen naar het volgende deel van de vragenlijst.

9. Hoe lang duurde de **tijdelijke** geluidsovergevoeligheid na een bezoek aan een muziekevenement?
◯ Minder dan dertig minuten
◯ Tussen de dertig minute en twee uur
◯ Tussen twee uur en zes uur
◯ Tussen zes uur en één dag
◯ Meer dan één dag

Wil je nog iets kwijt ter aanleiding van deze vragenlijst? Dan kan je dat eventueel hieronder schrijven!

Je kunt op de knop (>>) klikken om door te gaan naar het einde van de vragenlijst.

Einde

Dit is het einde van de vragenlijst. Ik heb jou een aantal stellingen voorgelegd over het nemen van maatregelen voor het beschermen van het gehoor. Deze statements zijn opgesteld aan de hand van twee verschillende modellen, namelijk de Theorie van Gepland Gedrag (Theory of Planned Behaviour) en het Gezondheid Overtuiging Model (Health Belief Model). Het doel van dit onderzoek is het verkrijgen van inzicht in het nemen van maatregelen voor het beschermen van het gehoor onder Nederlandse jongvolwassenen tussen de 18 en 30 jaar, aan de hand van deze modellen.

Wil je te zijner tijd de resultaten van het onderzoek ontvangen? Als je de resultaten van het onderzoek wilt ontvangen, klik op "Ja" en vul jouw email adres in. Als je de resultaten niet wilt ontvangen, klik op "Nee". Je hoeft dan **geen** email adres in te vullen.
◯ Ja, ik vind het leuk om te zijner tijd de resultaten van het onderzoek te ontvangen. Mijn email adres is:
◯ Nee, ik heb geen behoefte om de resultaten te ontvangen.

Wil je één van de twee Bol.com-bonnen van tien euro winnen? Als je kans wilt maken, klik op "Ja" en vul jouw email adres in. Als je geen kans wilt maken, klik op "Nee". Je hoeft dan **geen** email adres in te vullen.
◯ Ja, ik wil kans maken. Mijn email adres is:
◯ Nee, ik wil geen kans maken.

Heel erg bedankt voor jouw deelname! Jouw bijdrage is waardevol voor mijn onderzoek!

Je kunt nu op de knop (>>) klikken om het onderzoek te voltooien.