## Thesis

## The importance of the sound of a radical product innovation

Findings on the effect of the familiarity of music in advertisements about radical product innovations on the intention to adopt radical product innovations.

## By

Niek Klaassen

| Student Number: | S1030014 |
| :--- | :--- |
| Institute: | Radboud University Nijmegen |
| Program: | Master Marketing |
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| Supervisor: | Csilla Horváth |

## Preface

This is the thesis about the research into the effect of the degree of the familiarity of music that is played in advertisements for radical product innovations on the intention to adopt the radical product innovation.

The thesis has been written to fulfill the graduation requirements of the Master Marketing at the Radboud University in Nijmegen. I was engaged in researching and writing this thesis from January to June 2020.

I hope you enjoy your reading,
Niek Klaassen

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#### Abstract

The majority of innovations that are introduced are failing. This is because potential customers refuse to adopt them, due to evoked resistance. An important reason for the resistance to innovations is the anxiety evoked by radical innovations. Since music can evoke strong emotions and reduce anxiety, this study investigated the effect of music on the intention to adopt radical innovations. Music with a twist was hypothesized to have a significant effect on the intention to adopt, compared to familiar, unfamiliar and no music, due to the expectation that music with a twist evokes the least anxiety against radical innovations. To test this, 264 Dutch participants were randomly assigned to an online questionnaire that included a video about the Ohoo Waterball, a radical innovative product. In this video participants were exposed to familiar music, unfamiliar music, music with a twist or no music. In addition to the variable intention to adopt the radical product innovation, four other dependent variables were also examined. These were: attitude towards the innovation, willingness to try the innovation, willingness to buy the innovation and resistance towards the innovation. In addition, the mediating effect of state anxiety has also been tested. Results showed that music with a twist did not have a significant effect on the intention to adopt the radical product innovation and the additional variables. Also, no evidence has been found that state anxiety acts as a mediator between familiarity of music and the intention to adopt. In contrast to familiarity, likeability of the music has a significant effect on all dependent variables. This study also described managerial implications, limitations and suggestions for further research.


## Content

Preface ..... 1
Acknowledgements ..... 2
Abstract ..... 3

1. Introduction ..... 6
2. Theoretical framework ..... 9
2.1 Resistance to radical innovations and product adoption ..... 9
2.2 Anxiety and radical product innovations ..... 10
2.3 Music in advertisements, state anxiety and product adoption ..... 12
2.4 The effect of the degree of familiarity of music on consumers' state anxiety to adopt radical product innovations ..... 13
2.5 Familiar music in advertisements for radical product innovations and the effect on consumers' anxiety to adopt radical product innovations. ..... 13
2.6 The role of cognitive dissonance in familiar music and radical product innovations ..... 14
2.7 Music with a twist in advertisements for radical product innovations and the effect on consumers' state anxiety to adopt radical product innovations ..... 15
2.8 Unfamiliar music in advertisements for radical product innovations and the effect on consumers' state anxiety to adopt radical product innovations. ..... 15
2.9 Conceptual framework. ..... 16
3. Methodology ..... 18
3.1 Introduction ..... 18
3.2 Research strategy ..... 18
3.3 Research design questionnaire ..... 18
3.4 Research design Pre-test ..... 20
3.4.1 Pre-test operationalization ..... 22
3.4.2 Pre-test results ..... 24
3.5 Final survey ..... 27
3.5.1 Operationalization ..... 28
3.5.2 Participants ..... 31
3.5.3 Data Analysis ..... 31
3.6 Validity and reliability ..... 32
3.7 Ethics ..... 33
4. Results ..... 34
4.1 Manipulation check ..... 34
4.2 Descriptive statistics ..... 35
4.3 The effect of music on the intention to adopt ..... 36
4.4 The effect of degree of familiarity of music on the intention to adopt ..... 37
4.5 The role of state anxiety in the effect of degree of familiarity of music on the intention to adoptradical innovations39
4.6 The effect of Likeability of music on the intention to adopt a radical product innovation ..... 42
5. Discussion ..... 47
6. Conclusion ..... 51
6.1 Managerial implications ..... 52
6.2 Limitations ..... 53
6.3 Further research ..... 54
7. References ..... 55
Appendix A. Overview operationalization of the variables ..... 64
Appendix B. Final Survey ..... 69

## 1. Introduction

Nowadays, innovation is one of the most important concerns of each organization (Tohidi and Jabbari 2012). According to McKinsey (2010), $84 \%$ of the executives think innovations play an important role in their growth strategy and the Accenture 2015 US Innovation story tells us that $84 \%$ of the executives think that future success is very dependent on innovations. This percentage is increased in comparison with previous years (Elron and Alon, 2015).

Besides that, innovative companies have $11 \%$ higher revenues than not innovative companies (Booz \& Co, 2011). Innovations are also very important for organizations to distinguish themselves from competitors in a market with a lot of competition (Gourville, 2016) and not to be defeated by competitors.

Although innovations are important to organizations, it is very difficult for companies to make a success of their innovation. Most business corporations are faced with a very high failure of new products (Booz, Allen and Hamilton, 1982). Every year there are introduced over 30,000 products and 95 percent of these new products fail (Emmer, 2018). Only a few ideas for product innovations succeed and lead to success. A key reason for why product innovations do not succeed is the consumer's resistance to innovations and the consumers would not adapt the innovative product. (Ram and Sheth, 1989).

A lot of research is done to consumers' adoption of new products and how to overcome the consumers' resistance to innovation. According to Garcia, Bardhi and Friedrich (2007), innovations conflict with the consumers' ingrained belief structures, requires acceptance of unfamiliar routines or needs abandoning deep-rooted traditions. These innovations where consumers have to change their established behaviour are called resistant innovations (Garcia, Bardhi and Friedrich, 2007). Ram and Sheth (1989) define innovations resistance as 'the resistance offered by consumers to an innovation, either because it conflicts with their belief structure. Radical product innovations are often incongruent with people's expectations and because of that, consumers are often negative about this extreme incongruence (Taylor and Noseworthy, 2020). Research has been done into which strategies can be applied to make consumers more comfortable against radical product innovations (Boyle, 2006; Arts et al., 2015; Rogers, 2013; Keizer et al. 2015 and Kleijnen et al. 2009). These studies pay less attention to the emotions of people that are evoked by radical product innovations. Recent research advocates the importance of emotions in new product development. Wood and Moreau (2006) suggests that innovation adoption can be improved by the addition of emotional responses to a product innovation. Besides this, Chaudhuri, Aboulnasr and Ligas (2014) found significant difference in the kind of emotions and the
effect on radical innovations. Achar (2016) did research to the influence of incidental emotions on decision making and he found evidence that incidental emotions influences decision-making and persuasion.

It is interesting to investigate a negative emotion that has not been researched in this area, namely anxiety. According to Noseworthy, Muro and Murray (2014), anxiety is a negative emotion evoked by incongruence. So, research has been done to the anxiety that can arise against radical product innovations, but until now, no research has been done on how this anxiety can be reduced.

It is interesting to investigate the role that music plays in advertisements for radical product innovations to reduce consumers' anxiety of these innovations and thereby increase the chance of product adoption. Although researchers investigate and develop strategies how to deal with resistance to innovations and how they can overcome the resistance, they never pay attention to the role of music in overcoming resistance on innovations.

For promoting new products, advertisements are a very important tool that people can persuade (Terkan, R. 2014). In advertisements you hear music. According to a research of Nielsen, music is a powerful element to inspire people to buy a product when it's combined with the right advertisement. (Nielsen, 2015). According to Koelsch (2010), music has a very strong effect on the emotion of humans. In the research that is conducted by Webster and Weir (2015), it becomes clear that the kind of music influences the emotions of people. Numerous kinds and elements of music are investigated, but the role of the degree of familiarity of music in reducing anxiety, especially for radical innovations, has never been investigated.

So, we can conclude that there has been done a lot of research on resistance to innovations and that the main reason for this resistance is that product innovations conflict with customers' belief structures, familiar routines and their deep-rooted traditions. This incongruence creates some anxiety and tension for customers, but there has never been paid attention to the role that music plays in overcoming this anxiety for radical innovations.

The aim of this research is to investigate if there is the possibility to reduce this anxiety for new radical product innovations by using music. It is interesting to investigate the role of the degree of familiarity of music. This includes three different types of music, familiar music, music with a twist and unfamiliar music. There has never been conducted any research to the role of this kinds of music in reducing the consumers' anxiety for innovations. So, now it's very interesting to investigate the role of this kind of music to reduce consumers' anxiety against radical innovation and to do research if there is a difference between the three
degrees of familiarity of music that could make new innovations more comfortable for customers.

The research question is as follows: To what extent has the degree of familiarity of music played in advertisements an effect on the intention to adopt radical product innovations?

This research would be relevant in a theoretical and a practical way. It contributes to the theory, because there has never been any research into if it matters if you use a certain degree of familiarity of music in advertisements about radical product innovations and their effect on resistance to innovation. Much research has been done into causes for resistance to innovations, but research into the effect of the degree of familiarity of music on the resistance to innovation and the intention to adopt radical product innovations is still missing. Previous studies have shown that anxiety affects the resistance to innovation, because anxiety leads to a lower intention to adopt. That is why the role of anxiety will also be included in this study. The effect of familiarity of music during advertisements for radical innovation on anxiety has never been investigated. When useful information comes from this research, there are leads to further research into elements that are related to the familiarity of music, anxiety and the intention to adopt radical product innovations. In this way, research will make a theoretical contribution. Researchers are also given tools to conduct further investigations through this research.

In addition, it is practically very relevant. As indicated, managers are very faced with the problem of successfully market their new products due to resistance to innovation. A lot of research has already been done on what managers can do, but it doesn't seem to help these managers yet. They do not really see an increase in the intention to adopt radical product innovations of potential customers. This research will reveal new conclusions that managers can use. It provides managers with new information about how familiar the music should be in advertisements for radical innovative products to increase the intention to adopt the radical innovative products. This research will also generate new insights that will give managers an idea of whether it is possible to reduce anxiety against radical innovative products with using music in advertisements. These new findings can be used by managers in their advertising and marketing campaigns to raise awareness of their new radical product innovation and convince potential customers to start using the product in the future. Using our results, managers could realize a sales increase and eventually develop a healthier economic position.

## 2. Theoretical framework

### 2.1 Resistance to radical innovations and product adoption

An innovation has been defined as "an idea, practice of object that people see as different" (Zaltman \& Wallendorf, 1983). If we look from a marketing point of view, according to Ram (1987), the definition of an innovation will focus more on the fact that the product is perceived by the consumer as new.

We assume that the perceived newness is due to a radical change in product concepts, so we are interested in radical innovations. In accordance with Chandy and Tellis (1998), a radical innovation is defined as a new product or service that possesses two properties. Firstly, a radical innovation arises from a new technology. In addition, a radical innovation must be a clear improvement in meeting the needs of the customer. In the innovation literature, radical innovations are also called discontinuous innovations, true innovations and really new products (Chaudhuri, Aboulnasr and Ligas, 2010). As mentioned, every year there are introduced over 30,000 products and 95 percent of these new products fail (Emmer, 2018). A key reason for why radical product innovations do not lead to success is the consumer's resistance to innovations and the consumers would not adopt the innovative product (Ram and Sheth, 1989). Zaltman and Wallendorf (1983) defined this resistance to change as "any conduct that serves to maintain status quo in the face of pressure to alter the status quo". When we talk about innovation resistance it will be about resistance that consumers have against changes as a result of innovations. Ram and Sheth (1989) defined innovations resistance as "the resistance offered by consumers to an innovation, either because it conflicts with their belief structure". According to Ram and Sheth (1989), innovations conflict with the consumers' ingrained belief structures, requires acceptance of unfamiliar routines or needs abandoning deep-rooted traditions. These innovations where consumers have to change their established behaviour are called resistant innovations (Garcia, Bardhi and Friedrich, 2007). New innovative products often challenge consumers' existing beliefs about a product (Taylor and Noseworthy, 2020). According to Taylor and Noseworthy (2020), new products can only stimulate a favourable response in consumers, when consumers do not have to give up or reconfigure their existing beliefs. If the new experience matches a product schema with existing beliefs of the consumer, it is congruent, but when it doesn't fit any existing product schema, it is incongruent (Mandler, 1982). When an innovation is extreme incongruent, expectations can be violated to such an extent that the incongruity cannot be resolved without reconstructing the existing schema, or forming an entirely new schema (Mandler, 1982). ). If a new product is extremely incongruent with existing set of beliefs, this will have negative
consequences for the evaluation of a product (Taylor and Noseworthy. 2020). According to Taylor and Noseworthy (2020), new products are often extremely incongruent with consumer expectations and their existing beliefs. Researchers have shown that consumers being adverse to extremely incongruent products (Noseworthy, Muro and Murray 2014). Radical innovations tend to elicit negative evaluations, because they are extreme incongruent with existing product concepts and existing beliefs (Mandler, 1982).

The inability to make sense of new radical innovative products produces anxiety (Noseworthy and Taylor, 2020). The schema congruity literature suggests that extreme incongruity lends itself to a heightened arousal state which manifests as anxiety, which often results in negative evaluations of products. (Mandler, 1982; Noseworthy, Muro, \& Murray, 2014). If the innovation is evaluated negatively, it is very unlikely that later product adoption will occur (Olshavsky and Spreng, 1996).

So, from prior research we can conclude that there is resistance to innovations, because radical innovation are extreme incongruent with the existing beliefs and expectations of customers. This leads to the fact that consumers becoming anxious and are less likely to adopt the product.

### 2.2 Anxiety and radical product innovations

Few studies have considered the underlying role of consumers' emotional responses in the innovation and product adoption literature. The role of emotions is particularly present in the context of new products that represent radical innovations. Chaudhuri, Aboulnasr and Ligas (2010) claim that understanding emotional responses of consumers is essential to the success of radical innovations. As mentioned, such radical innovations are, by their nature, extremely incongruent with existing products and beliefs of consumers. Extreme incongruity has been proposed as a determinant of negative evaluation of phenomena (Mandler 1982). According to Chaudhuri, Aboulnasr and Ligas (2010), the emotions generated in response to an innovation may guide the evaluation of innovative products. Radical innovations present a greater threat for consumers compared to other product introductions.

It is interesting to focus on the emotion 'anxiety'. Anxiety can be regarded as "a component and possible result of stress, one that is characterized by a state of conditioned activation in which thoughts and feelings of worry, concern and uncertainty dominate" (Martens et al., 1990; Woodman and Hardy, 2001). Anxiety is a negatively emotion that has an impact on people's decision-making ( $\mathrm{Li}, 2018$ ). It is interesting to look at previous studies about a certain type of anxiety, namely state anxiety. So, anxiety is defined as state anxiety,
which has been described as "a transitory state of uneasiness or apprehension". It is momentary, occurs in response to a stimulus, and is likely to vary in intensity as a function of the stimulus (Spielberg, 1972). State anxiety is characterized by subjective feelings of tension, apprehension, nervousness, and worry, and by activation or arousal of the central nervous system (Elder, 1989). Prior research suggests that state anxiety can cause users to reject an offering so as to avoid goal-incongruent outcomes (Lee et al. 2011; Meuter et al. 2003; Thomas and Tsai 2012). These findings claim that state anxiety should reduce adoption intentions.

There is anxiety among consumers about radical innovations and such anxiety does increase perceived risk (Chaudhuri, Aboulnasr and Ligas, 2010). It is the arousal that often accompanies high anxiety (Mano, 1992, 1994). Arousal is considered to be a physiological and psychological activation, ranging from deep sleep to extreme excitement (Woodman and Hardy, 2001). As mentioned, extreme incongruity, what is created in the mind of consumers because of radical innovations, lends to a heightened arousal state which manifests as anxiety (Leith \& Baumeister, 1996). Anxiety is generally associated with high arousal (e.g., Russell, 1980). Min, Kalwani, and Robinson (2006) suggest that radical innovative products (where the incongruity with existing products is high) have a disadvantage because of their high levels of market and technological uncertainty. These uncertainties combined with the anticipated change in consumers' behaviour, make the consumers more sensitive for the risk for radical innovations (Herzenstein, Posavac, and Brakus 2007). Anxiety can increase the perception of risks associated with the innovation, which in turn decreases willingness to try and willingness to adopt (Chaudhuri, Aboulnasr and Ligas, 2010). Radical innovations usually involve significant changes in consumer behaviour (Robertson 1967). Any anxiety about having to adapt their future behaviours causes that consumers will focus more on the perceived risks of the innovation, which consequently have a negative impact on their willingness to try and willingness to adopt the innovation (Chaudhuri, Aboulnasr and Ligas, 2010).

So, radical product innovations are extreme incongruent with existing beliefs, what leads to more anxiety and higher perceived risks by consumers. This will lead to a decrease in the consumers' adoption of the radical innovative products. In prior research, there is no attention paid on how to reduce the anxiety to increase the willingness to adopt. It is interesting to investigate the use of music as the stimulus to vary the intensity of the state anxiety.

### 2.3 Music in advertisements, state anxiety and product adoption

It is interesting to focus on music played in advertisements for radical innovations. First, it is interesting to investigate if the music in advertisements leads to less state anxiety, so that people become more positive about the innovation and are more likely to adopt the product. In prior studies, few research has been done on the role of music in advertisements to reduce consumers' state anxiety for adopting new radical innovations.

Previously, research is conducted on the effect of music on emotions. According to Koelsch (2010), music has a very strong effect on the emotions of humans. In the research that is conducted by Webster and Weir, it becomes clear that the kind of music influences the emotions of people. (Webster and Weir, 2005).

A lot of studies have investigated the effects of music on anxiety. These have generally been conducted within medical environments. El-Hassan, McKeown and Muller (2009) suggests that music reduces anxiety levels in patients attending for endoscopy. According to Winter, Paskin and Baker (1994) music reduces stress and anxiety of patients in the surgical holding area. Music reduces also patient anxiety during Mohs surgery (Vachiramon, Sobanko, Rattanaumpawan and Miller, 2013). Besides this, there are numerous reviews by Evans (2002), Pelletier (2004) and Nilsson (2008) that all have shown that listening to music can be effective to alleviate state anxiety. According to Kemper and Danhauer (2012), music reduces anxiety for medical and surgical patients, for patients on intensive cares and patients undergoing procedures, and for children as well as adults. In contrast with our research to reduce anxiety for innovative products, all these researches have been conducted within the medical environment.

Elliott, Polman \& McGregor (2011) claim that stress and anxiety reduction is one of the major goals of music therapy. Biller, Olson, \& Breen (1974) suggest that sad music is better to lessen state anxiety than happy music. Smith and Morris (1976) did research to the differential effects of stimulative and sedative music on anxiety. A research of Labbe, Schmidt, Babin and Pharr (2007) states that individuals who are exposed to classical or relaxing music demonstrate significant reductions in state anxiety as compared to those who sit in silence.

Looking to the music in advertisements, music is the most stimulating aspect in advertising (Hecker, 1984). Music is a powerful tool that is used in advertising according to Nielsen (2015). He investigated the effectiveness of television advertisements. According the research, commercials with music performed better than commercial that did not use music in their commercials (Nielsen, 2015). Huron (1984) described some functions of music in
advertising. Music is entertainment, music supports the structure of an advertisement, music adds memorability to advertisements and music can provide a message in advertisements.

So, prior research shows that music is an important part of advertisements and music can reduce anxiety. Besides that, Alpert and Alpert (1990) claim that the mood and emotions of consumers altered by background music influence purchase intentions.

Based on these previous findings in the literature I put forward the following hypothesis: H1: Hypothesis 1: When music is played in ads for radical product innovations, there is a significant different effect on product adoption than when no music is played in the ads for radical product innovation.

### 2.4 The effect of the degree of familiarity of music on consumers' state anxiety to adopt radical product innovations. <br> Many elements of music have been discussed and the effect of these elements on people's

 feelings of anxiety, but little attention has been paid to the effect of the familiarity of music on feelings of anxiety. Therefore, it is interesting to focus on the effect of the degree of familiarity of music and its effect on consumers' anxiety. The feelings of anxiety have an effect on the resistance to innovations and product adoptions. So, now it is interesting to investigate if there is an effect of the degree of familiarity of music on the consumers' state anxiety to adopt a radical product innovation. The different kinds of music that are investigated are familiar music, music with a twist and unfamiliar music.
### 2.5 Familiar music in advertisements for radical product innovations and the effect on consumers' anxiety to adopt radical product innovations.

As indicated earlier, a lot of research has been conducted in the field of music and the effect on anxiety. Little attention has been paid here to the effect of the degree of familiarity of music on state anxiety. Familiar music will be defined as music that people know very well and that people recognize right away (Roehm, 2001).

Davis and Thaut (1989) investigated the influence of music on state anxiety. They suggest it is important to note that very different types of music were effective in bringing about positive change, because preference, familiarity, or past experiences with the music may have been more important than type in determining anxiety reduction potential.

According to the research, an individual selecting music to reduce anxiety often considers such factors as preference, familiarity, cultural context, and past associations with the music. Some theorists have praised the importance of familiarity because of its association with
liking (North \& Hargreaves, 1995). For a piece of music to be liked, the listener generally needs to be familiar with it. Schubert (2007) supports the finding that familiarity is an important predictor of liking and enjoyment. The findings in the research of Ali and Peynircioglu (2010) suggest that familiarity plays a role in regulating a listener's emotional response to music. Familiarity with musical stimuli increased liking or preference for the stimuli.

According to a research of Orive and Gerard (1987), a familiar stimulus has the potential of offsetting the anxiety that is aroused in a largely unknown context. When a familiar stimulus is combined with an anxiety-inducing situation, the familiar stimulus serves to counteract that anxiety and acquires positive value.

Prior research in consumer behaviour shows that varying specific background music selections along dimensions of familiarity could affect responses to "advertised" products (Alpert and Alpert, 1989).

So, it seems that familiar music in advertisements can reduce consumer anxiety and therefore consumers are more likely to adopt a product. But with advertisements about radical innovations, there is a chance that cognitive dissonance will occur when familiar music is played.

### 2.6 The role of cognitive dissonance in familiar music and radical product innovations.

 Cognitions are elements of knowledge that people have about their behaviour, attitudes, and environment. Festinger's (1962) cognitive dissonance theory claims that two cognitions can be either related to or unrelated to each other. If they are related, they are consonant or dissonant. Consonance occurs when one cognition follows from the other and dissonance occurs when one cognition follows from the opposite of the other. The theory of cognitive dissonance, developed by Festinger (1962), states that when a person holds two cognitions that are inconsistent with one another, he will experience cognitive dissonance. Cognitive dissonance is experienced as psychological discomfort (Elliot and Devine, 1994). Evidence indicates that cognitive dissonance may also lead to an emotional state of anxiety (Oshikawa, 1972). Sizemore (1977) suggests that as two cognitions confront each other, the consumer reaches the anxious and increasingly uncomfortable state of cognitive dissonance. Recent research shows also support that presence of cognitive dissonance is associated with feelings of anxiety (Suinn, 1965).It can be concluded from previous research that consumers experience less anxiety when familiar music is played in advertisements, which has a positive effect on product
adoption. For advertisements of radical innovations, this effect will not occur, because then there is cognitive dissonance. People see a completely new product that they do not know simultaneously with old familiar music. That will cause cognitive dissonance. Both cognitions are inconsistent with each other, which in turn provokes anxiety. As a result, there will be a negligible effect of old familiar music in advertisements for radical innovations on the product adoption of consumers. So, familiar music will alleviate the anxiety, but the cognitive dissonance will increase the anxiety.

### 2.7 Music with a twist in advertisements for radical product innovations and the effect on consumers' state anxiety to adopt radical product innovations.

It is interesting to pay attention to music with a twist and the effect on product adoption of radical innovations. There has been no research conducted into music with a twist.

Music with a twist will be considered as old familiar music with a new look. It's old music in a newer remix so it sounds somewhat familiar, but people don't know the song very well. This will ensure that some familiarity plays a role, but that cognitive dissonance is eliminated. It is expected that this music with a twist will take away the feelings of anxiety due to the familiar sound that the music of the twist entails, but that no anxiety will be evoked because no cognitive dissonance is experienced with the music with a twist.

Based on the previous findings in the literature I put forward the following hypothesis: Hypothese 2: When music with a twist is played in advertisements for radical product innovations, there is a significant different effect on product adoption than when familiar music is played in advertisements for radical product innovation.

### 2.8 Unfamiliar music in advertisements for radical product innovations and the effect on consumers' state anxiety to adopt radical product innovations. <br> Unfamiliar music will be defined as music that people don't know at all and don't recognize

 (Roehm, 2001). Very little research has been done on the effect of unfamiliar music on the state anxiety experienced by consumers. However, research has been conducted into other forms of unfamiliarity and the effect on anxiety. For example, Kiyora et al. (2004) state that unfamiliarity with surgical procedure produces an increase in state anxiety levels. Beatty (1988) found evidence that unfamiliarity elicit feelings of anxiety and physical discomfort and Buss (1980) also makes the claim that unfamiliarity is a cause of state anxiety. That increases the chance that consumers do not want to adopt the product. Based on the previous findings in the literature I put forward the following hypothesis:Hypothese 2: When music with a twist is played in advertisements for radical product innovations, there is a significant different effect on product adoption than when unfamiliar music is played in advertisements for radical product innovation.

From our hypotheses, it can be concluded that the use of music with a twist in ads for radical product innovations is expected to have the most beneficial effect on consumers' product adoption.

### 2.9 Conceptual framework

Figure 1 shows the conceptual framework. The conceptual framework is based on prior research. The degree of familiarity of music is expected to influence people's state anxiety. In addition, the state anxiety that people experience is expected to influence the product adoption of radical innovations. So the degree of familiarity of music is a stimulus that can vary the intensity of state anxiety. This variation in state anxiety in turn has an effect on the product adoption of radical innovations. So, it can be expected that the degree of familiarity of music has an effect on the product adoption of radical innovations, mediated by the state anxiety of consumers.


Figure 1. Conceptual model
In addition to the conceptual model in Figure 1, Figure 2 also shows a model where the expected theories are summarized again. The effect of the independent variable per condition on state anxiety is explained. In addition, the expected effect of state anxiety on the dependent variable (intention to adopt) is shown.


Figure 2. Theories per condition

## 3. Methodology

### 3.1 Introduction

The aim of this research was to investigate the effect of the degree of familiarity of music on the consumers' product adoption of radical innovations. State anxiety was taking into account as a mediator.

### 3.2 Research strategy

It was decided to conduct a field research. A questionnaire was used. Initially a lab experiment would be carried out, but unfortunately this was not possible. Therefore, a questionnaire was carried out. This questionnaire was conducted in the form of a web-based online survey. Quantitative data was collected with this online survey. An online survey was chosen because that was most suitable for viewing the results of the research. An online survey is very suitable for measuring parameters for a group of people (Evans and Mathur, 2005). In the case of this study, these were the familiarity of music, the state anxiety experienced by the respondents and the intention to adopt a radical product innovation. In the survey that was conducted, respondents were divided into four different groups. These groups of respondents were asked questions under 4 different conditions, namely no music, familiar music, music with a twist and unfamiliar music. By using an online quantitative survey, it was also easy to make comparisons between groups that have completed the questionnaire under a different condition (Evans and Mathur, 2005). In this study, this was ideal to see whether people who hear a different type of music also think differently about product adoption of the radical product innovation. The online questionnaire can be found in Appendix B.

### 3.3 Research design questionnaire

One radical innovation had been chosen for the research. These radical innovations followed from a pre-test. The design and results of the pre-test will be discussed later in this chapter.

All respondents participating in the final study saw radical innovations in the form of a video. The respondents saw the radical innovation under four different conditions. These were the following conditions:

- No music
- Familiar music
- Music with a twist
- Unfamiliar music

The songs that were used for the different conditions were determined by the pre-test that is explained in the next section.

So, while watching the radical innovations, the respondents heard music. One song is chosen per condition. Respondents participating in the study saw the radical innovations under a random condition.

So every respondent watched the same radical innovations, but under different conditions. The respondents were randomly given a condition.

After the innovation video, the respondents had to complete a questionnaire. One questionnaire is developed that is the same for all respondents. The different key concepts were addressed in the questionnaire. The key concepts are operationalized by using scales. The operationalization can be found further in this proposal.

## General notes:

- To check whether the sound works well enough for watching the videos, the questionnaire was started with a small sound check.
Soundcheck: Music \& voice stating: First a sound check was conducted to test if the audio worked properly. The respondents heard the word coffee. Respondents were asked to note down the word in the box below.
- There was no use of text in the video that explained the product, because then the respondent may base his/her intention to adopt the product on the product information that they got, instead of based on their feeling while watching the video. Text may draw away their attention. That means that the videos had to be clear.
- The videos was taken approximately 1 minute
- No advertisements by Youtube or whatsoever are presented during the survey
- Videos and music were allowed to be used. (There was asked permission to the authors)
- The survey and pre-tests were both in Dutch language
- $25 \%$ of the respondents was exposed to familiar music, $25 \%$ was exposed to music with a twist, $25 \%$ was exposed to unfamiliar music and $25 \%$ was exposed to no music during the video in the survey (counterbalancing).


### 3.4 Research design Pre-test

Before the final research was conducted based on the survey, a pre-test has been conducted. Based on this pre-test, it was determined which radical innovation is used in the survey and the degree of familiarity of music is determined. Based on this, the songs that belongs to the different conditions were determined. The right innovations and songs will be determined on the basis of the following two key concepts:

Innovation > Radicalness of an innovation.
Piece of music > Degree of familiarity
How these two key concepts were measured is described in the section "operationalization".
One pre-test was conducted to selected the most radical innovation and the three best pieces of music to use in the final survey.

## Innovation pre-test

This pre-test included 3 videos of different innovations. It was checked which products were perceived to be the most radical innovations. The most radical innovative product was used for the final survey.

These innovations were tested:

1. Smart Wardrobe: https://www.youtube.com/watch?v=Eac0obxW3o4 from 0.30-1.22
2. Iwatch: https://www.youtube.com/watch?v=vbNHCn2gHQ4 from 1.24-2.33
3. Ohoo Waterball: https://www.youtube.com/watch?v=jEoevGRYmKA from $0.00-1.18$ (Discussions were taken place with other students that were doing research to this topic, to determine the exact innovations that were used in de pre-test).

After every video, respondents were asked a question that measure the radicalness of the innovation. The scale to measure this, is discussed in the section "operationalization".

## Music pre-test

It was checked if the music that was perceived as familiar, was also perceived familiar by the respondents. The same accounted for the unfamiliar music and the music with a twist. This pre-test therefore contained 2 familiar songs, 2 songs with a twist and 2 unfamiliar songs. The order of these songs varied per respondent. After every song, the respondents had to rate the songs on 3 criteria using a 7 point Likert scale. The song with the highest score on familiarity was used for the familiar condition. The song with the lowest score on familiarity was chosen for the unfamiliar condition. Finally, the song closest to the mid score was chosen for the
condition music with a twist. The scale to measure the familiarity of the songs, is discussed in the section "operationalization".

In addition to the familiarity of the music, the music in the pre-test was also be tested for mood, arousal and likeability. These key concepts were also measured based on scales. These can also be found in the section "operationalization".

Table 1. Overview used music in the Pretest

| Familiarity | Song | BPM |
| :--- | :--- | :--- |
| Familiar | Klangkarussel - Sonnentanz <br> https://www.youtube.com/watch?v=JdeApaHKeGc\&feature=youtu. <br> be | 120 |
| Familiar | Tequila - The Champs <br> https://www.youtube.com/watch?v=3H6amDbAwlY\&feature=yout <br> u.be | 90 |
| Familiar with a <br> twist | Kellerkind - Sonnentanz Remix <br> https://www.youtube.com/watch?v=1DZqihmFzgQ | 120 |
| Familiar with a <br> twist | Jaques Le Noir - Tequila Remix <br> https://www.youtube.com/watch?v=11_D8ikte1Q | 120 |
| Unfamiliar | The Whole Other - Tea for Two <br> https://www.youtube.com/watch?v=aoej4ZywTZg | 128 |
| Unfamiliar | Quincas Moreira - Bluesed and Abused <br> https://www.youtube.com/watch?v=vBsfcFjAkZQ | 120 |

## Important:

- 40 respondents were needed for this pre-test
- The survey has taken approximately 10 minutes
- Demographics were asked: age/gender/nationality/education (same categories as the final survey)
- The innovations that was chosen was perceived to be the most innovative for the final survey
- The most familiar song, the most twisted song and the most unfamiliar song were chosen for our final survey. We have linked this pieces of music linked to our innovation video in the final survey.
- For the condition music with a twist we used 'remixes' of the songs that were perceived as familiar. So these are familiar songs with a new sound.


### 3.4.1 Pre-test operationalization

The following key concepts were measured in the pre-tests. An overview of the key concepts and the operationalization of the key concepts can be found in Appendix A.

## - Innovation pre-test

> Familiarity of an innovation
> Radicalness of an innovation
> Product newness
> Resistance

- Music pre-test
> Degree of Familiarity of music.
> Music Mood
> Music Arousal
> Music Likeability


## Innovation pre-test

## Measuring familiarity of an innovation

Respondents should not be familiar with a radical innovation. Therefore, the pre-test tested the familiarity of the product, based on previous research from Chaudhuri, Aboulnasr \& Ligas (2010) and Sabbe, Verbeke \& van Damme (2008). A 7-point scale was tested on 4 items. These items were: I had knowledge of the product before today / I have heard about the product before today / I consider myself as a user of the product / I consider myself as an expert in the product. All scales ranged from Strongly disagree/Strongly agree.

## Measuring radicalness of an innovation

In order to ensure that the selected products in the pre-test were indeed perceived as radical innovations, one item with a 7 point scale was used based on research by Lowe and Alpert (2015). This items was: How innovative is (product name)? The item ranged from Not at all innovative/Extremely innovative.

## Measuring perceived product newness

It was also important to test if the product is also perceived as new by consumers, to exclude the effect of product familiarity. In order to test this Perceiver Consumer Newness (PCN) for the selected products, four items with a 7 point scale were selected which are again based on research by Lowe and Alpert (2015). These items were: (Product name) is new, (Product name) is different, (Product name) is unique, (Product name) is original and (Product name) is innovative. All scales ranged from Strongly disagree/Strongly agree (Cronbach's alpha=0.98)

## Measuring resistance

It is important for radical innovation that people resist. Based on previous studies by Kleijnen et al. (2009), Ram \& Sheth. (1989) and Laukkanen et al. (2007), a 7-point scale was used to measure resistance to innovations with the statement: "I feel resistance to the product." The scale that was used to answer the statement ranged from Strongly disagree / Strongly agree. When respondents offer some resistance to the product ranged from Somewhat agree / Strongly agree, the question is asked whether they can explain why they experience resistance and what the main reason is why resistance is offered. The following reasons for resistance were available: It does not fit into my daily life / The image does not appeal to me / The product poses too many economic and/or financial risks / I am concerned that this product is not accepted by my friends (social risk)/ I value my current products (tradition).

## Music pre-test

## Measuring degree of familiarity of music

In order to test for music familiarity three items with a 7 point scale were used based on research from Roehm (2001). These scales were: not at all familiar/highly familiar, don't know it well at all/know it very well, don't recognize it right away/ recognize it right away. The questions accompanying these scales were: To what extent are you familiar with the music played in this clip?, To what extent do you know the music played in this clip? and To what extent did you the recognize the music played in this clip?. These items were used to assess familiarity in the pre-test as well as to control for familiarity in the real questionnaire.

## Measuring music Mood

In order to test if the music selected in the pre-test was indeed perceived as positive, four items with a 7 point scale were selected from research by Chou and Lien (2014). The scale used in this research was: Not at all/Very and the items were: Happy, joyful, pleased and cheerful.

## Measuring music Arousal

The music selected also has to be tested for high arousal in the pre-test. Adjectives to measure arousal will be used from research by Thompson, Schellenberg and Husain (2001). These adjectives were: Lively, active, energetic, full of pep and vigorous. The same 7 point scale as mentioned above was used to measure this which was: Not at all/Very to also assessed the degree of these adjectives.

## Measuring music Likeability

In order to test if the participants liked the music they listened to one item with a seven point scale that was used from Holbrook and Schindler (1989). This item was: I dislike it a lot/I like it a lot. The question accompanying this scale was: To what extent did you like the music played in this clip?

### 3.4.2 Pre-test results

The results of the pre-test will be discussed in this chapter. These results will reveal the most radical innovation that is used in the final survey. The pieces of music will also be chosen on the basis of these results. For each music condition familiar, unfamiliar, familiar with a twist, one piece of music will be chosen.

## Participants

The original sample size of the pretest was $\mathrm{N}=46$. The pretest ended up with $\mathrm{N}=45$ respondents, because one participant was unclear about his or her age. Only Dutch people participated in the pre-test. $40 \%$ of the respondents were male and $60 \%$ of the respondents were female. The age range was 21 to 70 . The average age was 41 years. The majority of respondents completed a HBO study ( $35.6 \%$ ) or a WO study ( $35.6 \%$ ).

The pre-test revealed results to select the innovation and the pieces of music for the final research.

## The choice for the radical innovation

Table 2. Descriptive statistics of the used radical innovations in the pre-test

|  | Innovation 1 | Innovation 2 | Innovation 3 |
| :--- | :--- | :--- | :--- |
|  | Smart | Wardrobe | IWatch |$|$| Ohoo waterbal |
| :--- |
| Respondents: |

The three aforementioned innovations were used in the pre-test. Table 2 shows the scores for the innovations on the variables that were measured in order to choose the most radical innovation. The innovation that was ultimately chosen to use in the final research is the Ohoo Waterball. That innovation scores highest on resistance, highest on radicalness, highest on deviance and lowest on familiarity. The four items that measured the radicalness of an innovation in this study. The choice for the Ohoo Waterball was therefore not very difficult.

## The choice for the pieces of music

In addition to the innovation, a pre-test was also conducted to test which music was most suitable for use during the final survey. This is to determine which pieces of music should be used for the video with the chosen innovation. The results of the music pre-test can be found below table 3 .

Table 3. Descriptive statistics familiarity of the music used in the pre-test

|  | Familiar 1 | Familiar 2 | Twist 1 | Twist 2 | Unfamiliar 1 | Unfamiliar 2 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  | Sonnentanz | Tequila | Sonnentanz remi Tequila remix | Tea for two | Blused an abused |  |
| Amount of respondents: | 24 | 24 | 21 | 21 | 45 | 45 |
| Familiarity (mean) | 5.32 | 5.60 | 3.76 | 5.02 | 1.55 | 2.03 |
| Familiarity (SD) | 1.97 | 0.98 | 2.16 | 1.78 | 0.98 | 1.27 |
| Cronbachs Alpha | 0.98 | 0.89 | 0.97 | 0.92 | 0.97 | 0.93 |
| Arousal (mean) | 4.81 | 5.24 | 4.53 | 5.50 | 3.60 | 4.20 |
| Arousal (SD) | 1.57 | 0.99 | 1.13 | 1.20 | 1.40 | 1.22 |
| Cronbachs Alpha | 0.98 | 0.96 | 0.93 | 0.96 | 0.97 | 0.95 |
| Mood (mean) | 5.06 | 5.44 | 5.00 | 5.42 | 3.73 | 4.56 |
| Mood (SD) | 1.53 | 1.02 | 1.21 | 1.14 | 1.30 | 1.28 |
| Cronbachs Alpha | 0.97 | 0.90 | 0.96 | 0.93 | 0.96 | 0.94 |
| Likeability (mean) | 5.46 | 5.33 | 4.95 | 5.14 | 3.16 | 3.96 |
| Likeability (SD) | 1.72 | 1.09 | 1.36 | 1.20 | 1.36 | 1.52 |
| Cronbachs Alpha | Not applicable | Not applicable | Not applicable | Not applicable | Not applicable | Not applicable |

For the choice of music, we tested how the types of music scored on the variable familiarity. In addition, the variables arousal, mood and likeability were tested for the different types of music to avoid bias of familiarity. It is important that the familiar music scores as high as possible on familiarity, music with a twist scores average on familiarity and unfamiliar music scores as low as possible on familiarity.

As a result, the Sonnentanz Remix ( $M=3.76, S D=2.16$ ) was chosen as familiar music with a twist. This piece of music is almost on the average when it comes to familiarity and thus scores much better than Tequila Remix ( $M=5.02$, $S D=1.78$ ). Because the Sonnentanz Remix was used, the original version of Sonnentanz ( $M=5.32, S=1.97$ ) was chosen to use as familiar music in the survey. The scores on arousal, mood and likeability for Sonnentanz and Sonnentanz Remix do not differ much from each other. Finally, the choice was made to use Bluesed and Abused as unfamiliar music. Despite the fact that Bluesed and Abused scores slightly higher on familiarity ( $M=2.03, S D=1.27$ ) than Tea for $T w o(M=1.55, S D=0.98)$, Bluesed and Abused scores more similar on the variables arousal, mood and likeability compared to Sonnentanz and Sonnentanz remix. That is why Bluesed and Abused was chosen as unfamiliar music. An overview of the chosen music for the final survey is showed in table 5.

A one-way ANOVA was conducted to test if the selected pieces of music differed significantly on their level of familiarity (Table 4). The assumptions to conduct a One-Way ANOVA were met. An one-way ANOVA test showed a significant difference ( $\mathrm{F}=29,980$, P $=.00)$ between Sonnentanz $(M=5.32, S D=1.97)$, Sonnentanz remix $(M=3.76, S=2.15)$ and Bluesed and Abused ( $\mathrm{M}=2.03, \mathrm{SD}=1.27$ ). These significant differences indicate that the three pieces of music are suitable for use as different categories.

Furthermore, a One-way ANOVA was conducted to check whether the different pieces of music do not differ in terms of mood, arousal and likeability to avoid bias. A one-way ANOVA showed that the three pieces of music do not differ in terms of $\operatorname{Mood}(\mathrm{F}=1.451, \mathrm{P}=$ $.24)$ and $\operatorname{Arousal}(\mathrm{F}=1.78, \mathrm{P}=.18)$ which is favourable for this use pieces of music in the survey. Likeability does differ significantly for the different pieces of music $(\mathrm{F}=8.196, \mathrm{P}=$ .00). Likeability will be included as a control variable for the final results of the study.

Table 4. One-way ANOVAS for familiarity, mood, arousal and likeability

ANOVA

| TotalFamiliarity | Sum of <br> Squares |  |  |  |  |  | df | Mean Square | F | Sig. |
| :--- | ---: | ---: | ---: | ---: | ---: | :---: | :---: | :---: | :---: | :---: |
| Between Groups | 174,968 | 2 | 87,484 | 29,980 | , 000 |  |  |  |  |  |
| Within Groups | 253,876 | 87 | 2,918 |  |  |  |  |  |  |  |
| Total | 428,844 | 89 |  |  |  |  |  |  |  |  |


|  |  | ANOVA |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Totalikousal |  |  |  |  |  |
|  | Sum of Squares | df | Mean Square | $F$ | Sig. |
| Between Groups | 6.031 | 2 | 3.015 | 1.777 | . 175 |
| Within Groups | 147,665 | 87 | 1,697 |  |  |
| Tetal | 153,696 | 89 |  |  |  |

ANOVA

| TotalMood |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Sum of Squares | df | Mean Square | F | Sig. |
| Between Oroups | 5,180 | 2 | 2,590 | 1.451 | . 240 |
| Within Groups | 155,267 | 87 | 1,785 |  |  |
| Total | 160.447 | 89 |  |  |  |


| LKE_1 | ANOVA |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Sum of Squares |  |  | F | Sig |
|  |  | df | Mean Square |  |  |
| Besween Oroups | 38,967 | 2 | 19,484 | 8.196 | . 001 |
| Within Oroups | 206,822 | 87 | 2.377 |  |  |
| Total | 245,789 | 89 |  |  |  |

Table 5: Een overview of the radical innovation and the music that is used in the final survey

| Radical Innovation | Ohoo Waterball |
| :--- | :--- |
| Familiar music | Sonnentanz by Klangkarausell |
| Familar with a twist music | Sonnentanz remix by Kellerkind |
| Unfamiliar music | Bluesed and Abused by Quincas Moreira |

### 3.5 Final survey

The aim of the final survey in this research is to investigate whether the degree of familiarity of music influences the intention to adopt radical innovative products. The final survey also investigate whether this relationship was mediated by state anxiety. An earlier section on the research design of the final survey already explained how the research is carried out. In this section it is showed which key concepts were used in the final survey and how exactly they were measured.

### 3.5.1 Operationalization

In the final online survey that is used for the research, the key concepts were:

- Independent variable: Degree of familiarity of music
- Dependent variable: Intention to adopt radical innovative products
- Mediator: State anxiety

An overview of the key concepts and the operationalization of the key concepts can be found in Appendix A.

## Independent variable:

The independent variable only consists of the degree of familiarity of music.

## Measuring degree of familiarity of music

In order to test for music familiarity, three items with a 7 point scale will be used. The measurement for familiarity of music is based on research from Roehm (2001). The scales are: not at all familiar/highly familiar, don't know it well at all/know it very well, don't recognize it right away/recognize it right away. The questions accompanying these scales will be: To what extent are you familiar with the music played in this clip?, To what extent do you know the music played in this clip? and To what extent did you the recognize the music played in this clip?. These items were used to assess familiarity in the pre-test as well as to control for familiarity in the real questionnaire.

## Dependent variables

The most important dependent variable was the variable intention to adopt the radical innovative product. In addition, a number of other dependent variables were used in the study that relate to intention to adopt in order to generate better reliability of the study. Only the results for the dependent variable intention to adopt the radical innovative product are analysed in the result chapter, because they will be in line with the other dependent variables. When there are noticeable differences, these are also analysed in the results chapter. The following variables were used to measure the intention to adopt:

- Intention to adopt radical innovative products
- Attitude towards the innovation
- Willingness to try the innovation
- Willingness to buy the innovation
- Resistance towards the innovation


## Measuring intention to adopt the radical innovative product

To measure the variable 'intention to adopt', a previous study by Zahid \& Din, 2019 was used. Four items were used to measure this variable, namely I intent to use this product in the future / I will use this product in the future / It is likely that I will use this product in the future / I expect to use this product in the future. For this, a 7-point Likert scale was used ranged from Strongly disagree to Strongly agree.

## Measuring attitude towards the innovation

To measure the variable "attitude towards the innovation" a 7-point scale was used for three items. The measure of this variable is based on previous research from Gopinath and Glassman (2008).

A 7-point scale was used to allow respondents to answer the following statement with the following answer options: My feelings towards the product are:

-Unpleasant/Pleasant<br>- Unfavourable/Favorable<br>--Dislike/Like

## Measuring willingness to try the innovation

To measure the variable 'willingness to try the innovation', three items with a 7 point scale were used. These items are based on previous research from Chaudhuri, Aboulnasr and Ligas (2010). The scale that was used is ranged from Strongly disagree / Strongly agree. The items accompanying these scales were: I would be willing to spend time to know the product better / I would be willing to spend the effort to know the product better / If asked, I am willing to test the product.

Measuring willingness to buy the innovation
To measure the variable 'willingness to buy the innovation', three items with a 7 point scale were used. These items are based on previous research from Dodds, Monroe \& Grewal (1991).

The scale that was used is ranged from Very low / Very high. The items accompanying these scales were The likelihood of purchasing this product is / The probability that I would consider buying the product is / My willingness to buy the product is

## Measuring resistance towards the innovation

As in the pre-test, it is measured whether the respondents have resistance to the innovation. Based on previous studies by Kleijnen et al. (2009), Ram \& Sheth. (1989) and Laukkanen et al. (2007), a 7-point scale was used to measure resistance towards the innovations with the statement: "I feel resistance to the product." The scale with which the statement was answered was ranged from Strongly disagree / Strongly agree. When respondents offer some resistance to the product ranged from Somewhat agree / Strongly agree, the question is asked whether they can explain why they experience resistance and what the main reason is why resistance is offered. The following reasons are available: It does not fit into my daily life / The image does not appeal to me / The product poses too many economic and/or financial risks / I am concerned that this product is not accepted by my friends (social risk) / I value my current products (tradition).

## Mediator

The mediator in this study was 'state anxiety'. This study investigated whether a possible effect of familiarity on intention to adopt was mediated by state anxiety.

## Measuring state anxiety

To measure the variable state anxiety, six items with a 7-point scale will be used. These items are based on the State-Trait Anxiety Inventory Form Y (Spielberg, 1970; Marteau and Becker 1992). The scale that will be used is: Stronly disagree/Strongly agree.. The state anxiety absent items accompanying these scales will be: I feel calm / I feel relaxed / I feel contend. The state anxiety present items accompanying the scales will be: I feel tense / I feel upset / I feel worried.

## Control variables

As in the pre-test, control variables are also measured in the questionnaire. The variable familiarity was measured to do a manipulation check. The other control variables are arousal, mood and likeability. These variables were measured to check if these aspects are equal per music condition so that these variables do not affect the effect of the independent variable on the dependent variable. The control variables arousal, mood and likeability are measured in exactly the same way as in the pre-test. For the operationalization of these variables, please refer to the pre-test operationalization.

## Demographic variables.

A number of demographic variables were also measured in the study to collect information about the respondents. Variables used for this are gender, age and education.

### 3.5.2 Participants

There was no specific target group reached with the study. Previous studies discussed in the theoretical framework have already shown that resistance to radical innovations is a general problem. Therefore, no specific population was investigated.

The sampling technique that was used is convenience sampling. The participants were selected on the basis of availability and willingness to take part. Useful results were obtained with this method (Sedgwick, 2013).

Respondents were contacted via an online survey. This was done with a web-based survey via Qualtrics. Respondents saw a link they can click on and then they can complete the online survey. The survey was shared on social media such as Facebook and Instagram, but was also sent via WhatsApp to reach older people. It was decided to distribute the online survey via social media, because a lot of people can easily be reached in this way.

The full sample was used for the study $(\mathrm{N}=264)$. These are all respondents who watched the video in the final survey for at least 10 seconds. In addition, the partial sample was also examined ( $\mathrm{N}=236$ ). This consisted of all respondents who watched the video for at least 32 seconds. Since no different results were found between the full sample and the partial sample, it was decided to focus on the full sample $(\mathrm{N}=264)$.

272 respondents participated in the study, but due to various missing values the full sample that is investigated was ultimately 264 . The final full sample is therefore $\mathrm{N}=264.100$ men and 164 women participated in the study. The age of the respondents ranges from 18 to 68 . The average age of the respondents is 33 years. The majority of respondents completed a HBO study (40.2\%) or a WO study (37.9\%).

### 3.5.3 Data Analysis

The IBM SPSS Statistics 25 program was used to analyse the collected data. As mentioned earlier, only the data collected for the full sample $(\mathrm{N}=264)$ was analysed.

First, data cleaning was conducted to only use and analyse reliable results. It removes missing values and unreliable statistics. This resulted in a respondent number of $\mathrm{N}=264$.

For the variable state anxiety, anxiety absent and anxiety present items were used. This variable has been revised first. Then, for the variables that used more than one item to measure the variable, the variable was computed into one variable. The average score of the items was used to have one value for the variable.

The likeability and state anxiety metric variables have been recoded into categorical variables to investigate whether significant differences were shown between certain groups of these variables.

Various tests were used to analyse all data. The study mainly used MANOVA tests, ANOVA tests and Independent Samples T tests because in this research, research was mainly done into differences between certain groups. In addition, a regression analysis was also used to measure the effect of one metric variable on another metric variable.

Before these statistical tests have been conducted, the assumptions for the specific tests have been checked. The statistical test has only been conducted if all assumptions are met in order to be able to conduct the statistical test.

Only the results on the dependent variable intention to adopt the radical innovation have been analysed. When notably different conclusions can be drawn about effects on the different dependent variables, these are analysed in the results chapter.

### 3.6 Validity and reliability

It was important for the research that there was measured with the survey what was intended to measure to gather valid results. Scales from previous studies had been used to ensure this validity. The best items for measuring the variables were examined per variable. An assessment was made of which items previous researchers used per variable and what their intentions were with that measure. In this way, the scales had been determined and this should lead to the actual measurement of what was meant to be measured (Heale and Twycross, 2015).

The research ensured that very reliable measurements are used. Several items were tested per variable. This repeated test for the same variable produced the same results. There was a consistent and reliable measurement. The analyses showed that the variables measured with multiple items had a high Cronbach's Alpha. The scales used per variable had been taken from previous studies. Also these studies had shown that it concerns reliable scaling and high consistency due to a high Cronbach's Alpha (Heale and Twycross, 2015).

### 3.7 Ethics

All respondents participating in the survey participated anonymously. This ensured that respondents had their privacy. In addition, participation in the study was completely voluntary. The results of the research were only used for scientific purposes. Respondents also had the option to stop when they want during the online survey (Gurau, 2007).

## 4. Results

This chapter describes the results of the study. This will be done on the basis of the various effects / hypotheses that were expected.

### 4.1 Manipulation check

A manipulation test has been performed to test if the music defined as familiar was perceived familiar by the audience as well. A table with the descriptives of familiarity, mood, arousal and likeability is shown in table 6 .

Table 6. Descriptives manipulation check final survey

|  | Familiar | Twist | Unfamiliar |
| :---: | :---: | :---: | :---: |
|  | Sonnentanz | Sonnentanz remix | Bluesed and Abused |
| \# respondents | 69 | 61 | 64 |
| Familiarity (mean) | 5.80 | 3.90 | 2.23 |
| Familiarity (SD) | 1.58 | 2.01 | 1.59 |
| Cronbachs Alpha |  | 0.97 |  |
| Mood (mean) | 5.17 | 4.84 | 4.93 |
| Mood (SD) | 1.13 | 1.20 | 1.03 |
| Cronbachs Alpha |  | 0.92 |  |
| Arousal (mean) | 4.73 | 4.51 | 4.49 |
| Arousal (SD) | 1.11 | 1.24 | 1.01 |
| Cronbachs Alpha |  | 0.92 |  |
| Likeability (mean) | 5.13 | 4.52 | 4.30 |
| Likeability (SD) | 1.32 | 1.58 | 1.39 |
| Cronbachs Alpha | n/a |  |  |

A One-way Anova was conducted to check whether the averages on familiarity, mood, arousal and likeability for the different music conditions differ significantly from each other (Table 7). The results show that the three pieces of music differ significantly in terms of familiarity $(F=70,570, P=.000)$. Sonnentanz $(M=5.80, S D=1.58)$ is the most familiar, Sonnentanz remix ( $\mathrm{M}=3.90, \mathrm{SD}=2,01$ ) scores average on familiarity and Bluesed and Abused is the least familiar $(\mathrm{M}=2.23$. $\mathrm{SD}=1.59)$. This means that there are different groups that participated in the study. A distinction can therefore be made between respondents who saw familiar music, music with a twist, unfamiliar music and no music during the innovation film.

In addition, the One-way ANOVA shows that the averages of $\operatorname{Mood}(\mathrm{F}=1.461, \mathrm{P}=.235)$ and Arousal ( $\mathrm{F}=.950, \mathrm{P}=.389=>.05$ ) do not differ significantly for the different music conditions. This avoids bias. The One-way ANOVA analysis show that effect of the different music conditions on likeability do not differ significantly from each other $(\mathrm{F}=6,104, \mathrm{P}=.003$ $=<.05)$. The effect of likeability will be discussed later in the results.

Table 7. One-way ANOVA manipulation check
ANOVA

|  |  | Sum of Squares | df | Mean Square | F | Sig. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| TOTAL_FAMILIARITY | Between Groups | 424,085 | 2 | 212,042 | 70,570 | ,000 |
|  | Within Groups | 573,898 | 191 | 3,005 |  |  |
|  | Total | 997,982 | 193 |  |  |  |
| TOTAL_MOOD | Between Groups | 3,652 | 2 | 1,826 | 1,461 | ,235 |
|  | Within Groups | 238,759 | 191 | 1,250 |  |  |
|  | Total | 242,411 | 193 |  |  |  |
| TOTAL_AROUSAL | Between Groups | 2,389 | 2 | 1,195 | , 950 | , 389 |
|  | Within Groups | 240,244 | 191 | 1,258 |  |  |
|  | Total | 242,634 | 193 |  |  |  |
| LIKE_1 | Between Groups | 24,823 | 2 | 12,412 | 6,104 | ,003 |
|  | Within Groups | 388,399 | 191 | 2,034 |  |  |
|  | Total | 413,222 | 193 |  |  |  |

### 4.2 Descriptive statistics

Table 8 shows the descriptive statistics of the research. This shows that the following numbers participated per condition.

Familiar music: 69 respondents
Twisted music: 61 respondents
Unfamiliar music: 64 respondents
No music: $\quad 70$ respondents
Table 8 also shows the averages and standard deviations per dependent variables for all music conditions. In addition, the Cronbachs Alpha for the dependent variables are shown. These are all well above 0.70 so there is reliability and internal consistency of the items that measured the dependent variables.

Table 8. Descriptive statistics for the independent variables.

|  | Familiar | Twist | Unfamiliar | No Music | Total |
| :---: | :---: | :---: | :---: | :---: | :---: |
| \# respondents | 69 | 61 | 64 | 70 | 264 |
| Attitude towards innovation (mean) | 4,47 | 4.43 | 4.30 | 4.52 | 4,43 |
| Attitude towards innovation (SD) | 1,35 | 1.11 | 1.30 | 1.45 | 1,31 |
| Cronbachs Alpha | 0,86 |  |  |  |  |
| Willingness to try (mean) | 4,63 | 4.60 | 4.68 | 4.60 | 4,63 |
| Willingness to try (SD) | 1,26 | 1.27 | 1.21 | 1.34 | 1,27 |
| Cronbachs Alpha | 0,79 |  |  |  |  |
| Intention to adopt (mean) | 3.51 | 3.50 | 3.36 | 3.59 | 3,49 |
| Intention to adopt (SD) | 1,41 | 1.35 | 1.45 | 1.34 | 1,37 |
| Cronbachs Alpha | 0,94 |  |  |  |  |
| Willingness to buy (mean) | 3,49 | 3,17 | 3,15 | 3.33 | 3,29 |
| Willingness to buy (SD) | 1,51 | 1,40 | 1,65 | 1.46 | 1,51 |
| Cronbachs Alpha | 0,90 |  |  |  |  |
| Resistance (mean) | 3,87 | 4.28 | 4.22 | 3.94 | 4,07 |
| Resistance (SD) | 1,84 | 1.54 | 1.66 | 1.82 | 1,72 |
| Cronbachs Alpha | n/a |  |  |  |  |

### 4.3 The effect of music on the intention to adopt

First, the hypothesis was discussed whether the people who are exposed to music differ significantly from the people who were not exposed to music during the innovation video in their intention to adopt the radical innovation. The descriptive statistics of these two different groups can be found in table 9 . 194 respondents have heard music. 70 respondents did not hear music.

Table 9. Descriptives Intention to adopt for the music and no music condition

## Group Statistics

|  | MUSIC_ | N | Mean | Std. Deviation | Std. Error <br> Mean |
| :--- | :--- | ---: | ---: | ---: | ---: |
| TOTAL_INTENT_TO_AD <br> OPT | Music | 194 | 3,45 | 1,389 | , 100 |
|  | No music | 70 | 3,59 | 1,337 | , 160 |

An Independent Samples T-Test was conducted to investigate whether the two conditions (music and no music) differ in their intention to adopt and the other dependent variables. The assumptions to perform an independent samples T-test for this study have been met.

The Independent Samples T-Test shows that the two music conditions (music and no music) do not differ significantly from each other on all the dependent variables.

The effect of the music conditions per dependent variable is examined. The Independent Samples T-Test shows that the two music conditions (music and no music) do not differ significantly from each other on the dependent variable intention to adopt (Table 10). The difference in effect between no music and music on intention to adopt is not significant $(\mathrm{P}=$ .471 => .05).

Table 10. Independent Samples T Test to test the significant difference between no music and music on the intention to adopt a radical innovative product.

Independent Samples Test

|  |  | Levene's Test for Equality of Variances |  | t | df | Sig. (2-tailed) | t-test for Equality of Means |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | F | Sig. |  |  |  |  |  | 95\% Confidence Interval of the Difference |  |
|  |  | Difference |  |  |  |  | Difference | Lower | Upper |
| TOTAL_INTENT_TO_AD OPT | Equal variances assumed |  | , 250 | ,617 | -,723 | 262 | . 471 | -,139 | , 192 | -,516 | , 239 |
|  | Equal variances not assumed |  |  | $-.736$ | 126,329 | , 463 | -, 139 | , 188 | -,511 | , 234 |

The first hypothesis was that when music is played in advertisements for radical product innovations, it has a more favourable effect on the intention to adopt than when no music is played in advertisements for radical product innovations. The mean of the music condition on the intention to adopt $(M=3.45)$ does not differ significantly from the mean of the no music
condition on the intention to adopt. ( $\mathrm{M}=3.59$ ). This hypothesis can be rejected on the basis of the results.

### 4.4 The effect of degree of familiarity of music on the intention to adopt

Since there are more than two different groups within the variable degree of familiarity and the effect of the degree of familiarity is tested here on several dependent variables, a

MANOVA is conducted. The MANOVA was conducted to investigate whether there is a significant difference between the music conditions and the effect on the intention to adopt and the other dependent variables. The assumptions to perform a MANOVA for this study have been met.

The MANOVA shows that there is no significant difference between the different music conditions and the effect on the dependent variables (Wilks Lambda, $\mathrm{P}=.860$ ) (Table 11). The effect of the music conditions per dependent variable is also examined. The MANOVA test shows that there is no significant difference between the different music conditions and their effect on the intention to adopt $(\mathrm{F}=.301, \mathrm{P}=.825)($ Table 12).

Table 11. Multivariate test for significant differences between the
different music conditions on the dependent variables.

| Multivariate Tests ${ }^{\mathbf{a}}$ |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Effect |  | Value | F | Hypothesis df | Error df | Sig. |
| Intercept | Pillai's Trace | ,980 | 2469,632 ${ }^{\text {b }}$ | 5,000 | 256,000 | ,000 |
|  | Wilks' Lambda | , 020 | 2469,632 ${ }^{\text {b }}$ | 5,000 | 256,000 | ,000 |
|  | Hotelling's Trace | 48,235 | 2469,632 ${ }^{\text {b }}$ | 5,000 | 256,000 | ,000 |
|  | Roy's Largest Root | 48,235 | 2469,632 ${ }^{\text {b }}$ | 5,000 | 256,000 | ,000 |
| MusicCondition | Pillai's Trace | ,036 | , 621 | 15,000 | 774,000 | ,859 |
|  | Wilks' Lambda | ,965 | . 619 | 15,000 | 707,105 | ,860 |
|  | Hotelling's Trace | , 036 | ,618 | 15,000 | 764,000 | ,862 |
|  | Roy's Largest Root | , 024 | 1,247 ${ }^{\circ}$ | 5,000 | 258,000 | ,288 |

a. Design: Intercept + MusicCondition
b. Exact statistic
c. The statistic is an upper bound on $F$ that yields a lower bound on the significance level

Table 12. A MANOVA test on the effect of the different music conditions on the intention to adopt the radical innovative product.

| TOTAL_INTENT_TO_ADOPT |  |  |  |  |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | :---: | :---: | :---: | :---: | :---: |
|  | Sum of <br> Squares | df |  |  |  |  |  | Mean Square | F | Sig. |
| Between Groups | 1,717 | 3 | , 572 | , 301 | , 825 |  |  |  |  |  |
| Within Groups | 494,916 | 260 | 1,904 |  |  |  |  |  |  |  |
| Total | 496,633 | 263 |  |  |  |  |  |  |  |  |

The second hypothesis was that music with a twist in advertisements for radical product innovations have a significant different effect on product adoption than when familiar music is used in advertisements for radical product innovations. MANOVA has shown that this is not the case. The effect of music with a twist on the intention to adopt radical innovative products $(\mathrm{M}=3.50, \mathrm{~S}=1.35)$ does not differ significantly from the effect of familiar music on intention to adopt radical innovative products ( $\mathrm{M}=3.49, \mathrm{~S}=3.49$ ), $(\mathrm{P}=1.00)$ (Table 13 and 14). The second hypothesis can therefore be rejected. Also for the other independent variables there are no significant differences between the twisted condition and the unfamiliar music condition.

The third hypothesis was that music with a twist in advertisements for radical product innovations has a significant different effect on product adoption than when unfamiliar music is used in advertisements for radical product innovations. MANOVA has shown that this is not the case. The effect of the twisted condition on the intention to adopt ( $\mathrm{M}=3.50, \mathrm{~S}=1.35$ ) is bigger than the effect of the unfamiliar music condition on the intention to adopt ( $\mathrm{M}=3.36$, $\mathrm{S}=1.45$ ) (Table 13), but the effects do not differ significantly from each other $(\mathrm{P}=.950)$. The third hypothesis can therefore be rejected. Also for the other independent variables there are no significant differences between the twisted condition and the unfamiliar music condition.

Table 13. Descriptive statistics of the different music conditions for the intention to adopt radical product innovations.

Descriptives

| TOTAL_INTENT_TO_ADOPT |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | N | Mean | Std. Deviation | Std. Error | 95\% Confidence Interval for Mean |  | Minimum | Maximum |
|  |  |  |  |  | Lower Bound | Upper Bound |  |  |
| Familiar | 69 | 3,49 | 1,381 | , 166 | 3,16 | 3,82 | 1 | 7 |
| Familiar with a Twist | 61 | 3,50 | 1,348 | , 173 | 3,15 | 3,84 | 1 | 7 |
| Unfamiliar | 64 | 3,36 | 1,452 | , 182 | 3,00 | 3,73 | 1 | 7 |
| No Music | 70 | 3,59 | 1,337 | ,160 | 3,27 | 3,91 | 1 | 7 |
| Total | 264 | 3,49 | 1,374 | ,085 | 3,32 | 3,66 | 1 | 7 |

Table 14. Multiple comparisons between the music conditions and the effect on the intention to adopt a radical product innovation.

## Multiple Comparisons

Dependent Variable: TOTAL_INTENT_TO_ADOPT
Tukey HSD

| (l) MUSIC_CONDITION | (J) MUSIC_CONDITION | Mean Difference (1J) | Std. Error | Sig. | 95\% Confidence Interval |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | Lower Bound | Upper Bound |
| Familiar | Familiar with a Twist | -, 005 | , 242 | 1,000 | -,63 | , 62 |
|  | Unfamiliar | , 128 | ,239 | , 950 | -. 49 | , 75 |
|  | No Music | -,098 | , 234 | , 975 | -.70 | , 51 |
| Familiar with a Twist | Familiar | ,005 | ,242 | 1,000 | -,62 | , 63 |
|  | Unfamiliar | , 133 | , 247 | , 950 | -,51 | , 77 |
|  | No Music | -,093 | , 242 | , 980 | -.72 | , 53 |
| Unfamiliar | Familiar | -, 128 | , 239 | , 950 | -.75 | , 49 |
|  | Familiar with a Twist | -,133 | , 247 | , 950 | -.77 | , 51 |
|  | No Music | -,226 | ,239 | ,780 | -, 84 | , 39 |
| No Music | Familiar | ,098 | , 234 | , 975 | -,51 | , 70 |
|  | Familiar with a Twist | , 093 | , 242 | , 980 | -,53 | , 72 |
|  | Unfamiliar | , 226 | , 239 | , 780 | -,39 | , 84 |

### 4.5 The role of state anxiety in the effect of degree of familiarity of music on the intention to adopt radical innovations

The hypothesis took into account that people have state anxiety of radical innovation, in that way that the intention to adopt the radical innovation would be low. It has been argued that the different music conditions in the advertisements can reduce this state anxiety. That is why research has also been conducted into the role that state anxiety plays in the effect of the degree of familiarity on the intention to adopt.

It has been stated that the effect of the degree of familiarity of music on product adoption of radical innovative products was mediated by state anxiety. This is not the case, because there is no effect at all of the familiarity of music on product adoption.

It is still interesting to investigate the effects of familiarity of music on state anxiety and to measure the effect of anxiety on product adoption.

Table 15 shows the descriptive statistics of the different music conditions and their values on the variable state anxiety. The averages and standard deviations are shown. The Cronbach's Alpha is 0.83 , indicating that the items that have measured state anxiety are very consistent.

Table 15. Descriptives for the effect of the music conditions on state anxiety.

|  | Familiar | Twist | Unfamiliar | No Music | Total |
| :--- | :---: | :---: | :---: | :---: | :---: |
| \# respondents | 69 | 61 | 64 | 70 | 264 |
| State Anxiety (mean) | 2,94 | 3,07 | 3,05 | 2,77 | 2,95 |
| State Anxiety (SD) | 1,02 | 1,13 | 1,00 | 1,17 | 1,08 |
| Cronbachs Alpha |  |  | 0,83 |  |  |

First, it was investigated whether or not the condition of music and no music differ significantly for the variable state anxiety. This was done using an Independent Samples T test (Table 16). The assumptions to conduct an Independent Samples T-test are fulfilled.

Table 15. Descriptive statistics of the effect of no music and music on state anxiety.

| Group Statistics |  |  |  |  |  |
| :--- | :--- | ---: | ---: | ---: | ---: |
|  | MUSIC_ | N | Mean | Std. Deviation | Std. Error <br> Mean |
| STATEANXIETY | Music | 194 | 3,02 | 1,046 | , 075 |
|  | No music | 70 | 2,77 | 1,170 | , 140 |

Table 16. Independent Samples $T$ Test to test the difference between the condition no music and music on the state anxiety.

| Independent Samples Test |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Levene's Test for Equality of Variances |  | df |  | Sig. (2-tailed) | t-test for Equality of Means |  |  |  |
|  |  | F | Sig. |  |  | Mean Difference | Std. Error Difference | 95\% Confidence Interval of the Difference |  |
|  |  |  |  |  |  | Lower |  | Upper |
| STATEANXIETY | Equal variances assumed | ,749 | ,388 | 1,669 | 262 |  | ,096 | , 251 | . 151 | -,045 | ,548 |
|  | Equal variances not assumed |  |  | 1,584 | 111,254 | , 116 | , 251 | . 159 | -,063 | ,566 |

The Independent Samples T-test shows that the effect of music in advertisements about radical innovative products $(M=3.02)$ on state anxiety does not differ significantly from no music in advertisements about radical innovative products ( $\mathrm{M}=2.77$ ), ( $\mathrm{P}=.096$ ). So, music or no music during the video about the radical innovative product has no significant difference on state anxiety.

It was investigated whether the degree of familiarity of music has any effect on the state anxiety that people experience while watching the innovation video. To investigate this, a One-way ANOVA was conducted to see whether the averages on state anxiety per music condition differ significantly from each other. The assumptions to conduct a one-way ANOVA are fulfilled.

Table 17. The One-way ANOVA that shows the effect between the different degrees of familiarity of music on state anxiety.

| ANOVA |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: |
| STATEANXIETY | Sum of <br> Squares |  |  |  |  |
|  | 3,884 | df | Mean Square | F | Sig. |
| Between Groups | 304,965 | 260 | 1,295 | 1,104 | , 348 |
| Within Groups | 308,848 | 263 |  | 1,173 |  |
| Total |  |  |  |  |  |

Table 17 shows that the effect of the different music conditions on state anxiety do not differ significantly from each other $(\mathrm{F}=1.104, \mathrm{P}=0.348)$. This indicates that there is no difference between the degree of familiarity of the music and the state anxiety that people have while watching the innovation video.

In addition, a regression analysis was conducted to determine the effect of the independent variable familiarity of music on the dependent variable state anxiety that people experienced during the video about the radical innovative product. The assumptions to conduct a regression analyse are fulfilled. The regression analysis shows that the extent to which people experience the music as familiar during the innovation video has no effect on the state anxiety they experience during the innovation video $(\mathrm{P}=.063)$ (Table 18).

Table 18. A regression analyse to test the effect of familiarity of music on state anxiety.

| Coefficients ${ }^{\text {a }}$ |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Unstandardized Coefficients |  |  |  | Standardized Coefficients Beta | t | Sig. |
| Model |  | B | Std. Error |  |  |  |
| 1 | (Constant) | 3,266 | , 152 |  | 21,481 | ,000 |
|  | TOTAL_FAMILIARITY | -,061 | ,033 | -, 134 | -1,869 | , 063 |

a. Dependent Variable: STATEANXIETY

So there is no effect of familiarity of music in advertisements on the state anxiety that people experience during these advertisements.

A regression analysis was also conduct to check if there is an effect of state anxiety on product adoption (Table 19). The assumptions to conduct a regression analyse are fulfilled.

Table 19. A regression analyse to test the effect of state anxiety on the intention to adopt a radical innovative product.

| Coefficients ${ }^{\text {a }}$ |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Unstandardized Coefficients |  |  |  | Standardized Coefficients Beta |  |  |
| Model |  | B | Std. Error |  | t | Sig. |
| 1 | (Constant) | 4,641 | ,234 |  | 19,810 | ,000 |
|  | STATEANXIETY | -,391 | , 075 | -,308 | -5,240 | ,000 |

The regression analysis shows that state anxiety has a significant effect on the intention to adopt a radical product innovation $(\mathrm{P}=.00)$. The negative Unstandardized Coefficient ( $\mathrm{B}=$ -.391) indicates that the greater the state anxiety during a radical innovation film, the lower the intention to adopt the radical product innovation

To investigate this further, the respondents are divided into three different groups.

- Low State Anxiety
- Neutral State Anxiety
- High State Anxiety

A one-way ANOVA was conducted to check whether the effects of these different groups on intention to adopt the radical product innovation differ significantly from each other (Table 21). The assumptions to conduct a one-way ANOVA are fulfilled.

Table 20. Descriptive statistics for the effect of degrees of state anxiety on the intention to adopt.

## Descriptives

| TOTAL_INTENT_TO_ADOPT |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | N | Mean | Std. Deviation | Std. Error | 95\% Confidence Interval for Mean |  | Minimum | Maximum |
|  |  |  |  |  | Lower Bound | Upper Bound |  |  |
| Low State Anxiety | 188 | 3,70 | 1,352 | ,099 | 3,50 | 3,89 | 1 | 7 |
| Neutral State Anxiety | 33 | 3,29 | 1,233 | , 215 | 2,86 | 3,73 | 1 | 6 |
| High State Anxiety | 43 | 2,73 | 1,310 | , 200 | 2,33 | 3,13 | 1 | 6 |
| Total | 264 | 3,49 | 1,374 | ,085 | 3,32 | 3,66 | 1 | 7 |

Table 21. A One-way ANOVA to test for a significant difference of the effect of the degrees of anxiety on intention to adopt.

ANOVA

| TOTAL_INTENT_TO_ADOPT |  |  |  |  |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | :---: | :---: | :---: | :---: | :---: |
|  | Sum of <br> Squares | df |  |  |  |  |  | Mean Square | F | Sig. |
| Between Groups | 34,245 | 2 | 17,122 | 9,665 | , 000 |  |  |  |  |  |
| Within Groups | 462,388 | 261 | 1,772 |  |  |  |  |  |  |  |
| Total | 496,633 | 263 |  |  |  |  |  |  |  |  |

The One-way Anova shows that the effect of the degree of state anxiety on intention to adopt differs significantly from each other $(\mathrm{P}=.000)$

Table 22. Multiple comparisons of the effect of degree of state anxiety on the intention to adopt radical product innovations.

## Multiple Comparisons

| Dependent Variable: TOTAL_INTENT_TO_ADOPT |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| (I) DEGREEANXIETY_ | (J) DEGREEANXIETY_ | Mean Difference (l- J) | Std. Error | Sig. | 95\% Confid Lower Bound | nce Interval Upper Bound |
| Low State Anxiety | Neutral State Anxiety | , 404 | , 251 | , 244 | -,19 | 1,00 |
|  | High State Anxiety | , $968{ }^{*}$ | , 225 | ,000 | ,44 | 1,50 |
| Neutral State Anxiety | Low State Anxiety | -,.404 | ,251 | , 244 | -1,00 | , 19 |
|  | High State Anxiety | ,564 | ,308 | , 161 | -,16 | 1,29 |
| High State Anxiety | Low State Anxiety | $-, 968{ }^{*}$ | ,225 | ,000 | -1,50 | -,44 |
|  | Neutral State Anxiety | -,564 | ,308 | , 161 | -1,29 | , 16 |

*. The mean difference is significant at the 0.05 level.
The Multiple Comparison (Table 22) shows that the effect of high anxiety on the intention to adopt. $(M=2.73)$ differs significantly from the effect of low anxiety on the intention to adopt ( $\mathrm{P}=.000$ ) People who experience low anxiety during the video score significantly higher on intention to adopt $(\mathrm{M}=3.70)$ than people who experience high anxiety during the video $(\mathrm{M}=$ 2.73).

### 4.6 The effect of Likeability of music on the intention to adopt a radical product innovation.

The pre-test and the manipulation test have already shown that the likeability differs per music condition. Therefore, it is interesting to investigate the effect of likeability on the intention to adopt a radical product innovation. The respondents were divided into three different groups for this investigation:

- High likeability
- Neutral likeability
- Low likeability

A MANOVA was performed with the music conditions and likeability as fixed factors and all dependent variables. (Table 23 and 24). The assumptions to conduct a two-way MANOVA are fulfilled.

Table 23. Between subject factors degree of likeability of the music and the degree of the familiarity of music.

Between-Subjects Factors

|  |  | Value Label | N |
| :--- | :--- | :--- | :---: |
| DEGREELIKE_ | 1,00 | Low likeability | 37 |
|  | 2,00 | Neutral <br> likeability | 42 |
|  | 3,00 | High <br> likeability | 115 |
| MUSIC_CONDITION | 1 | Familiar | 69 |
|  | 2 | Familiar with <br> a Twist | 61 |
|  | 3 | Unfamiliar | 64 |

A two-way MANOVA shows no significant interaction between the effect of familiarity of the music and the likeability of the music

Table 24. A MANOVA to test the effect of the interaction of the familiarity of music and the likeability of music on the intention to adopt a radical innovation.

| Tests of Between-Subjects Effects |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Source | Dependent Variable | Type III Sum of Squares | df | Mean Square | F | Sig. |
| Corrected Model | TOTAL_ATTITUDE | $48,723^{\text {a }}$ | 8 | 6,090 | 4,398 | , 000 |
|  | TOTAL_INTENT_TO_AD OPT | 29,077 ${ }^{\text {b }}$ | 8 | 3,635 | 1,959 | ,054 |
| Intercept | TOTAL_ATTITUDE | 2422,444 | 1 | 2422,444 | 1749,209 | , 000 |
|  | TOTAL_INTENT_TO_AD OPT | 1519,665 | 1 | 1519,665 | 819,176 | , 000 |
| DEGREELIKE_ | TOTAL_ATTITUDE | 37,163 | 2 | 18,582 | 13,417 | , 000 |
|  | TOTAL_INTENT_TO_AD OPT | 19,067 | 2 | 9,534 | 5,139 | . 007 |
| MusicCondition | TOTAL_ATTITUDE | 6,210 | 2 | 3,105 | 2,242 | . 109 |
|  | TOTAL_INTENT_TO_AD OPT | 3,603 | 2 | 1,802 | , 971 | , 381 |
| DEGREELIKE_* <br> MusicCondition | TOTAL_ATTITUDE | 14,032 | 4 | 3,508 | 2,533 | . 042 |
|  | TOTAL_INTENT_TO_AD OPT | 8,664 | 4 | 2,166 | 1,168 | , 327 |
| Error | TOTAL_ATTITUDE | 256,203 | 185 | 1,385 |  |  |
|  | TOTAL_INTENT_TO_AD OPT | 343,196 | 185 | 1,855 |  |  |
| Total | TOTAL_ATTITUDE | 4067,222 | 194 |  |  |  |
|  | TOTAL_INTENT_TO_AD OPT | 2683,889 | 194 |  |  |  |
| Corrected Total | TOTAL_ATTITUDE | 304,926 | 193 |  |  |  |
|  | TOTAL_INTENT_TO_AD OPT | 372,273 | 193 |  |  |  |
| b. R Squared $=, 078$ (Adjusted R Squared $=, 038$ ) |  |  |  |  |  |  | on the intention to adopt a radical innovation $(\mathrm{P}=.327)$. (Table 24)

There is a significant interaction between the effect of the degree of familiarity of music and the likeability of the music on the attitude towards innovation $(\mathrm{P}=.042)$. This indicates that the effect of familiar music on attitude towards innovation becomes significant as soon as the music is liked more.

There is a significant direct effect between the likeability of music and the intention to adopt the product. A MANOVA shows a significant difference between the effect of low likeability and the effect of high likeability on the intention to adopt the radical innovation ( $\mathrm{P}=.003$ ), (Table 25). The intention to adopt the radical innovation was significantly higher for respondents who liked the music $(M=3.65)$ than for respondents who did not like the music ( $\mathrm{M}=2.81$ ).

Table 25. Multiple comparisons of the effect of degree of likeability of the music on the intention to adopt radical product innovations.

## Multiple Comparisons

Dependent Variable: TOTAL_INTENT_TO_ADOPT
Tukey HSD

| (l) DEGREELIKE_ | (J) DEGREELIKE_ | $\begin{gathered} \text { Mean } \\ \text { Difference (1- } \\ \mathrm{J}) \\ \hline \end{gathered}$ | Std. Error | Sig. | 95\% Confidence Interval |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | Lower Bound | Upper Bound |
| Low likeability | Neutral likeability | -,650 | , 306 | ,088 | -1,37 | , 07 |
|  | High likeability | -.844 ${ }^{\text {* }}$ | , 257 | ,003 | -1,45 | -,24 |
| Neutral likeability | Low likeability | ,650 | ,306 | ,088 | -, 07 | 1,37 |
|  | High likeability | -,195 | ,245 | ,706 | -.77 | , 38 |
| High likeability | Low likeability | , $844{ }^{*}$ | , 257 | ,003 | , 24 | 1,45 |
|  | Neutral likeability | , 195 | ,245 | ,706 | -,38 | ,77 |

*. The mean difference is significant at the 0.05 level

Table 26.. Descriptive statistics for the effect of degrees of likeability of the music on the intention to adopt.

Descriptives

| TOTAL_INTENT_TO_ADOPT |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | N | Mean | Std. Deviation | Std. Error | 95\% Confidence Interval for Mean |  | Minimum | Maximum |
|  |  |  |  |  | Lower Bound | Upper Bound |  |  |
| Low likeability | 37 | 2,81 | 1,159 | , 191 | 2,42 | 3,20 | 1 | 6 |
| Neutral likeability | 42 | 3,46 | 1,556 | , 240 | 2,98 | 3,95 | 1 | 7 |
| High likeability | 115 | 3,66 | 1,340 | , 125 | 3,41 | 3,90 | 1 | 7 |
| Total | 194 | 3,45 | 1,389 | , 100 | 3,26 | 3,65 | 1 | 7 |

Based on these results, a MANOVA was conducted to investigate whether there is a significant difference in the effect between the participants who liked the music and those who were not exposed to music during the video on the intention to adopt the radical innovation. The assumptions to conduct a MANOVA are fulfilled. A MANOVA shows that the effect of high likeability and the effect of no music on the intention to adopt do not differ significantly from each other $(\mathrm{P}=.989)$ (Table 27). The Intention to adopt the radical innovation was not significantly higher for participants who liked the music $(\mathrm{M}=3.70)$ compared to people who were not exposed to music $(\mathrm{M}=3.59)$ (Table 28).

Table 27. Multiple comparisons of the effect of degree of likeability of the music and the condition no music on the intention to adopt radical product innovations.

| Multiple Comparisons |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Dependent Variable: TOTAL_INTENT_TO_ADOPT Tukey HSD |  |  |  |  |  |  |
| (I) DEGREE_LIKEABILITY_ | (J) <br> DEGREE_LIKEABIIITY_ | $\begin{gathered} \text { Mean } \\ \text { Difference (l- } \\ \mathrm{J}) \end{gathered}$ | Std. Error | Sig. | 95\% Confic Lower Bound | Upper Bound |
| Low likeability | Neutral likeability | -,650 | , 305 | . 146 | -1,44 | . 14 |
|  | High likeability | -,844* | , 256 | ,006 | -1,51 | -. 18 |
|  | No music | $-.780^{*}$ | ,275 | ,025 | -1,49 | -,07 |
| Neutral likeability | Low likeability | . 650 | , 305 | . 146 | -,14 | 1,44 |
|  | High likeability | -,195 | , 244 | , 855 | -,83 | . 44 |
|  | No music | -. 130 | ,264 | , 961 | -,81 | , 55 |
| High likeability | Low likeability | ,844* | ,256 | ,006 | , 18 | 1,51 |
|  | Neutral likeability | , 195 | ,244 | , 855 | -. 44 | , 83 |
|  | No music | ,065 | , 205 | , 989 | -.47 | , 59 |
| No music | Low likeability | , $780{ }^{\circ}$ | ,275 | , 025 | , 07 | 1,49 |
|  | Neutral likeability | , 130 | ,264 | , 961 | -.55 | , 81 |
|  | High likeability | -,065 | , 205 | , 989 | -,59 | . 47 |

Table 28.. Descriptive statistics for the effect of degrees of likeability of the music and no music on the intention to adopt.

Descriptives

|  | N | Mean | Std. Deviation | Std. Error | 95\% Confidence Interval for Mean |  | Minimum | Maximum |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | Lower Bound | Upper Bound |  |  |
| Low likeability | 37 | 2,81 | 1,159 | , 191 | 2,42 | 3,20 | 1 | 6 |
| Neutral likeability | 42 | 3,46 | 1,556 | , 240 | 2,98 | 3,95 | 1 | 7 |
| High likeability | 115 | 3,66 | 1,340 | , 125 | 3,41 | 3,90 | 1 | 7 |
| No music | 70 | 3,59 | 1,337 | , 160 | 3,27 | 3,91 | 1 | 7 |
| Total | 264 | 3,49 | 1,374 | ,085 | 3,32 | 3,66 | 1 | 7 |

A One-way ANOVA was also conducted to investigate whether the degree of likeability of music has a significant effect on respondents' state anxiety. The assumptions to conduct a one-way ANOVA are fulfilled. This analysis shows that the degree of likeability of music does have a significant effect on people's state anxiety ( $\mathrm{F}=9,451, \mathrm{P}=.00$ ) (Table 29). The state anxiety was significantly lower for participants who liked the music $(M=2.77)$ compared to people who are neutral against the music ( $M=3.26$ ) or did not like the music ( $M$ = 3.52) (Table 30 and 31).

Table 29. A One-way ANOVA to test for a significant difference of the effect of the degrees of likeability of music on state anxiety.

## ANOVA

|  | Sum of Squares | df | Mean Square | F | Sig. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Between Groups | 19,017 | 2 | 9,508 | 9,451 | , 000 |
| Within Groups | 192,170 | 191 | 1,006 |  |  |
| Total | 211,187 | 193 |  |  |  |

Table 30. Multiple comparisons of the effect of degree of likeability on the state anxiety.

| Multiple Comparisons |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Dependent Variable: STATEANXIETY <br> Tukey HSD |  |  |  |  |  |  |
| (I) <br> DEGREE_LIKEABILITY_ | (J) DEGREE_LIKEABILITY_ | $\qquad$ | Std. Error | Sig. | 95\% Confid Lower Bound | nce Interval Upper Bound |
| Low likeability | Neutral likeability | ,265 | , 237 | ,679 | -,35 | , 88 |
|  | High likeability | ,754* | , 198 | ,001 | , 24 | 1,27 |
|  | No music | ,756* | ,213 | ,003 | ,20 | 1,31 |
| Neutral likeability | Low likeability | -,265 | , 237 | ,679 | -,88 | , 35 |
|  | High likeability | ,490* | ,189 | , 050 | ,00 | , 98 |
|  | No music | , 491 | ,205 | ,080 | -, 04 | 1,02 |
| High likeability | Low likeability | $-.754^{*}$ | ,198 | ,001 | -1,27 | -,24 |
|  | Neutral likeability | $-, 490 *$ | , 189 | ,050 | -,98 | , 00 |
|  | No music | , 001 | . 159 | 1,000 | -,41 | , 41 |
| No music | Low likeability | -.756 * | , 213 | , 003 | -1,31 | -,20 |
|  | Neutral likeability | -.491 | , 205 | ,080 | -1,02 | , 04 |
|  | High likeability | -,001 | ,159 | 1,000 | -,41 | , 41 |

[^0]Table 31. Descriptive statistics for the effect of degrees of likeability of the music on state anxiety..

## Descriptives

| STATEANXIETY |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | N | Mean | Std. Deviation | Std. Error | 95\% Confidence Interval for Mean |  | Minimum | Maximum |
|  |  |  |  |  | Lower Bound | Upper Bound |  |  |
| Low likeability | 37 | 3,52 | 1,034 | , 170 | 3,18 | 3,87 | 2 | 6 |
| Neutral likeability | 42 | 3,26 | 1,024 | , 158 | 2,94 | 3,58 | 1 | 6 |
| High likeability | 115 | 2,77 | ,986 | ,092 | 2,59 | 2,95 | 1 | 6 |
| No music | 70 | 2,77 | 1,170 | , 140 | 2,49 | 3,05 | 1 | 6 |
| Total | 264 | 2,95 | 1,084 | ,067 | 2,82 | 3,08 | 1 | 6 |

## 5. Discussion

In the study into the effect of degree of familiarity on the intention to adopt radical innovative products, it was first investigated whether it matters if there is music or no music played and whether this has an effect on the intention to adopt radical innovations. The results of the study showed that people who were exposed to music during an advertisement for radical innovative products do not show significant differences in their intention to adopt the product than people who were not exposed to music. This is not in line with a previous study by (Nielsen, 2015) that concluded that commercials with music perform better than commercials that do not use music in their commercial. An explanation for this difference is that Nielsen's research did not focus on radical product innovations.

It has been stated that respondents who were exposed to music during the advertisement would have a higher intention to adopt the radical innovative product, because the music would reduce the 'state anxiety' of people's. The results show that this is not the case. The conditions of music or no music has no significant differences on the effect on state anxiety.

Previous research has been done into the role of music in reducing state anxiety. That research showed that music is important to reduce people's state anxiety (El-Hassan, McKeown and Muller (2009), Kemper and Danhauer (2012) and (Vachiramon, Sobanko, Rattanaumpawan and Miller, 2013). This project shows different results than previous studies. It should be noted that previous studies were mainly in the medical field and that music is important there to reduce state anxiety. Of course, this research is not focused on the medical side, but on radical innovative products. This can explain the difference in conclusions. Based on this, it can be stated that it depends on the context whether or not music has a significant effect on state anxiety. This does not seem to be the case in the context of radical product innovations. These are new results that can be taken into account in the future.

A possible explanation for the fact that music or no music do not differ significantly in the effect on state anxiety in this context, could be that music is subordinated to the innovation they see during a video. People may be too focused on the product and do not listen to the music behind the video.

It could also be due to the type of music played during the innovation video. In this project, music with high arousal and positivity was used. In a previous study by Labbe, Schmidt, Babin and Pharr (2007) it was stated that people experience significantly less state anxiety when they are exposed to classical and relaxing music than when they sit in silence. Classical
and relaxing music differs from music that generates a lot of arousal, so the different types of music is also a possible explanation of why music or no music in this study showed no significant difference for the effect on state anxiety.

It can be argued that there are new results showing that music does not differ significantly in the effect on state anxiety than when music is not played in contexts of advertisements about radical product innovations. In addition, whether or not to play music in these advertisements has no influence on the intention to adopt radical innovations as well.

In addition, it was investigated whether the degree of familiarity of music in advertisements has an effect on the intention to adopt radical innovative products. In previous research, Chou and Lien (2010) have argued that familiar songs have a positive effect on creating a positive attitude towards advertisements and brands, because of flavourful nostalgic thoughts. Chou and Lien (2014) have also found a positive effect between music familiarity and purchase intention. This is not in line with this research. The results of this study have shown that it does not make a significant difference for the intention to adopt a radical product innovation whether you run familiar music, unfamiliar music, music with a twist or no music during an advertisement for a radical innovative product. These different conclusions can be explained by the fact that this study focused on advertising for radical product innovations, while the study by Chou and Lien (2010) focused on advertising in general.

State anxiety has also played an important role in this research. This study has shown that, in addition to having no significant effect on the intention to adopt, the degree of familiarity of music also has no significant effect on state anxiety. So it doesn't matter to what extent the music you're exposed to is familiar to experience differences in state anxiety.

This is not in line with previous studies. Previous research has shown that there would be an effect of familiarity of music on people's feelings of anxiety. People who want to reduce anxiety would rather choose music that is familiar, was suggested by (North \& Hargreaves, 1995). According to Orive and Gerard (1987), familiar music also has the potential to remove feelings of anxiety in an unknown context. These conclusions from their studies were questioned for this study, because cognitive dissonance would arise if a familiar sound would be combined with a radical innovation. Two cognitions would then collide and cause more anxiety (Sizemore, 1977). Oshikawa (1977) and Suin (1965) have provided evidence in previous studies that cognitive dissonance leads to anxiety.

For these reasons, music with a twist in ads for radical product innovation was expected to have a beneficial effect on intention to adopt the radical product innovation than familiar music in those ads, because there is some familiarity, but there would be no cognitive dissonance in ads with twisted music. This hypothesis has not been fulfilled. Respondents who were exposed to music with a twist during the ad with the radical product innovation did not differ significantly in terms of state anxiety than people who were familiar music.

Therefore, the conclusions of North \& Hargreaves (1995) and Orive and Gerard (1987) do not apply to this study, because the familiar music has no significant different effect on the state anxiety and intention to adopt than the other music conditions.

It seems that the cognitive dissonance, in addition to having an effect on the familiar music condition, also had an effect on the music with a twist condition. This twisted music may have evoked cognitive dissonance, because the music was somewhat familiar and was combined with a radical product innovation, which creates state anxiety just like with the familiar music.

Therefore, a possible explanation is that the cognitive dissonance also played a role in the twisted music, so that no significant differences were found between the music with a twist condition and the familiar music condition and their effect on state anxiety and the intention to adopt the radical product innovation.

In addition, previous studies have concluded that feelings of unfamiliarity elicit anxiety (Kiyora, 2004) and increase state anxiety (Beatty, 1988). Buss (1980) stated that unfamiliarity is a cause of state anxiety. It can be deduced from this that the effect of unfamiliar music on the intention to adopt radical innovations should also differ significantly from the other music conditions. The previous findings are not in line with this study. The results showed that the effect of unfamiliar music on state anxiety does not differ significantly from other degrees of familiarity of music. In addition, music with a twist was expected to have a significant different effect on intention to adopt than unfamiliar music. This has not been shown in this investigation. A possible explanation for this can be found in a previous study by Wagner (2001) that has provided evidence that the fit between the music and the brand does influence evaluations of advertising. Respondents exposed to unfamiliar music may experience a better fit between that unfamiliar music and radical innovation, so that the effect of music with a twist is not significant different on the intention to adopt a radical innovation than unfamiliar music in advertisements.

So, this study showed that the degree of familiarity of music has no significant effect on the state anxiety experienced during the advertisements by the respondents. On the other hand, this research has shown that state anxiety does have a significant effect on the intention to adopt a radical innovation. This is in line with previous studies of the effect of anxiety on intention to adopt. Chaudhuri, Aboulnasr and Ligas (2010) argue that anxiety feelings negatively influence the intention to adopt a product. This has also been shown in the study of Leith \& Baumeister (1996). State anxiety thus has a significant negative effect on the intention to adopt.

Initially it was not the intention to investigate the effect of likeability of music on the intention to adopt radical innovations, but the results showed that the degree of familiarity of music has a significant effect on the likeability of music. This is in line with previous research which stated that familiarity is important through its association with liking (North \& Hargreaves, 1995). Schubert (2007) also concluded in a previous study that familiarity is an important predictor of liking. These conclusions are therefore in line with this study.

These findings also examined whether liking has a significant effect on the intention to adopt. The investigation has shown this significant effect. The effect on intention to adopt a radical innovative product of an individual who likes the music differs significantly from someone who does not like the music. This is in line with an earlier study by Galan (1988) where evidence has been found that music likeability in advertisements has a significant positive effect on the intention to buy.

A new insight from this study is that there is no significant difference between high likeability and no music and their effect on intention to adopt radical innovations. This phenomenon has never been investigated before.

Ultimately, it can be stated that the research into the effect of state anxiety on intention to adopt is in line with previous studies, but that conclusions from previous studies about the cause of this anxiety are not in line with this study, because the degree of familiarity of music has no significant effect on state anxiety. Besides that, the degree of familiarity of music has no significant effect on the intention to adopt radical innovations as well. The findings about the effect of familiarity of music on the likeability in music are in line with previous studies and the effect of likeability on the intention to adopt products is in line with previous studies as well.

## 6. Conclusion

Managers have the problem that their radical product innovations fail on the market. This study was conducted to investigate whether this problem can be eliminated. This research was conducted to investigate to what extent the degree of familiarity in music advertisements has an effect on the intention to adopt radical product innovations. The conclusion that can be drawn from the research is that the degree of familiarity of music in advertisements about radical innovative products has no significant effect on the intention to adopt radical product innovations. The investigation has shown, firstly, that it does not matter at all whether music or no music is played in the advertisements. The effects of these conditions no music and music do not differ significantly on the intention to adopt the radical product innovation. In addition, this research showed that when music is played in advertisements about radical innovative products it does not matter to what extent this music is familiar to people. Whether the music is unfamiliar, familiar or twisted, the intention to adopt the radical innovation will not be affected. So, the intention to adopt can not be influenced by these music conditions.

This research and previous studies have shown that people who experience higher state anxiety are less likely to adopt radical product innovations. That is why it was also investigated whether state anxiety can be reduced by playing a certain degree of familiarity of music in advertisements for radical product innovations. No evidence has been found for this. The different music conditions (familiar, unfamiliar and music with a twist) in an advertisement for radical product innovations show no significant difference in their effect on people's state anxiety.

Conclusions can be drawn from this research about the role that likeability plays in reducing resistance to radical products. It has been found that the degree of familiarity does have a significant positive effect on the likeability of the music played in the advertisements. The degree of likeability also has a positive effect on the intention to adopt a radical product innovation. This does not mean that the degree of familiarity of music has a significant effect on the intention to adopt a radical product innovation. It is only the likeability of the music that plays a role in this. It is therefore interesting to conclude that the degree of likeability of music does indeed have a positive significant effect on the intention to adopt. The more likeable the music in the advertisement about radical product innovation, the greater the intention to adopt the radical product innovation.

It is also interesting to see that the effect of high likeability of the music in advertisements on the intention to adopt the product does not differ significantly from the effect of no music on
the intention to adopt the product. So basically it doesn't matter whether or not there is music playing in the ad, but if music is played, it should be liked by the people.

The research also showed that the degree of likeability of music has a negative significant effect on state anxiety. So the higher the degree of likeability of the music in the advertisements about radical innovative products, the lower the state anxiety people experience during that advertisements.

In summary, it can be concluded that the degree of familiarity of music in advertisements do not play a role in influencing the intention to adopt radical product innovation. In order to influence this intention, it is better to take into account the likeability of the music and reduce the state anxiety of the people who exposed to the advertisements.

### 6.1 Managerial implications

The aim of this research was to contribute to the managers who market new innovative products. They notice that there is resistance to these new innovative products and that people have no intention of adopting these radical innovative products. This research investigated whether the degree of familiarity of music played in advertisements for radical product innovations can stimulate people to adopt radical innovation. No evidence of this has been found in the study. For marketing managers who want to market and promote their new radical innovative product, when choosing music in the ad, they do not have to take into account whether or not people are familiar with the music. This has no influence on the intention to adopt the radical innovative product.

In addition, it has even been shown that it does not matter whether music or no music is played during the advertisement. So the managers who are responsible for the ad campaigns do not necessarily have to bother to choose music to play in the ad.

When music is placed in the ad, it does not matter whether or not people are familiar with the music, but whether or not people like the music. When music is used in advertisements for radical innovative products it is very important that the likeability of the music is high. This has a proven more positive effect on the intention to adopt the radical innovation than when music is used that has a neutral likeability or a low likeability. So initially it doesn't matter whether or not music is used under the ad, but when music is used it should be liked by the people. Further research will be needed to discover what kind of music is liked by the people and which music is not. In this way, managers can choose music character traits when placing music in ads for radical product innovations.

Research has shown that the intention to adopt radical product innovation is low because people experience state anxiety towards the product. This research also shows that people who experience state anxiety during the video with the radical innovation are less likely to adopt the product. It is therefore important for managers to look for a way to reduce this state anxiety during an advertisement about radical product innovations. In any case, this anxiety is not reduced by distinguishing the use of familiar music, music with a twist or unfamiliar music. At all, using or not using music does not affect the state anxiety that people experience against radical innovation. When music is used in the advertisements to reduce state anxiety, it is important that the music is liked by potential customers. This also shows that it does not matter whether or not managers choose to use music, but when they use music, it is important that music is used that potential customers like. As indicated earlier, future research will have to be done to find out what kind of music has the highest likeability.

So, it has been shown that reducing state anxiety can lead to a higher intention to adopt radical innovative products, but that the presence of music in advertisements cannot reduce this anxiety. It is important to conduct further research to find out which factors can reduce this state anxiety and how to increase the intention to adopt radical innovative products.

Therefore, no concrete action points for managers emerged from this study. It does not matter whether or not music is played in advertisements for radical product innovations and when music is played, it must be liked to increase the intention to adopt radical product innovations. Managers should therefore not simply choose the music that will be played in advertisements for radical innovative products. Attention should be paid to whether this music is liked or not.

### 6.2 Limitations

Initially, this study would be conducted as a lab experiment, but due to circumstances and all measures related to the Covid-19 pandemic, this lab experiment could not be performed. This has been an important limitation during the investigation. These measures also contributed to the fact that study workplaces were not always available to work on the research. That caused sometimes some delays.

Another limitation is that only instrumental music was used for the advertisement in the study. The results of an previous research of Allan (2001) indicated that song vocals, either original or altered, are more effective stimuli of advertising effects than instrumentals or no music. Therefore, it might have been better to use music with vocals. If music with vocals were used,
there might be significant differences between the effects of the different music conditions on the intention to adopt radical product innovations.

Finally, perhaps more attention could be paid to the aspect of cognitive dissonance. It has not been investigated whether the respondents think that the music suited the radical innovation. If specific attention was also paid to cognitive dissonance, conclusions could also be drawn about this. For example, did people experience cognitive dissonance when familiar music was played in the advertisement of a radical innovation would have been an interesting research topic. That has been a limitation in this research, but perhaps this is something for further research.

### 6.3 Further research

The aim of the research was to investigate whether there has been an effect of the degree of familiarity of music on the intention to adopt radical product innovations. No evidence has been found for this, so the necessary future research will still have to be carried out for this phenomenon. Managers are left with the problem that their radical innovations fail on the market, and taking into account the degree of familiarity of music in advertisements for these products, is not useful to solve the problem. That is why research will have to be conducted in the future into other factors that can play a role in positively influencing the intention to adopt radical innovations. Research can be done into other types of music played in the ads. This research focused on the degree of familiarity of music, but it is also possible to consider, for example, different music genres and the effect of these music genres or pitches of the music and the effect of these different pitches of the music.

In addition, for example, the effect on intention to adopt radical product innovations can be investigated when celebrities are used in advertisements for radical product innovations.

This research also revealed that state anxiety has a significant negative effect on the intention to adopt a radical product innovation. This means that state anxiety must be reduced in commercials to increase the intention to adopt. A lot of future research is also possible to investigate how this anxiety can be reduced. In this research it is proved that the degree of familiarity of music played in advertisements has no influence on this. In the future, for example, research can be done into whether it makes a difference whether music is played or whether the product is explained with vocals. Perhaps a good explanation of the product reduces anxiety and gives consumers more confidence in the product, which would also increase the intention to adopt. This is an interesting topic for future research.

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## Appendix A. Overview operationalization of the variables

| Pre-test |  |
| :---: | :---: |
| Innovation |  |
| Familiarity of an innovation |  |
| Chaudhuri, Aboulnasr \& Ligas (2010) and Sabbe, Verbeke \& van Damme (2008) | 7-point Likert scale: (1) strongly disagree to strongly agree <br> - I had knowledge of the product before today This product is different <br> - I have heard about the product before today <br> - I consider myself as a user of the product <br> - I consider myself as an expert in the product |
| Radicalness of an Innovation |  |
| Lowe and Alpert (2015) | 7-point Likert scale on 2 items: <br> - How innovative is the product? (Not at all innovative / Extremely innovative) |
| Perceived Product Newness |  |
| Lowe and Alpert (2015) | 7-point Likert scale: (1) strongly disagree to (7) strongly agree <br> - (Product name) is new, <br> - (Product name) is different <br> - (Product name) is unique <br> - (Product name) is original <br> - (Product name) is innovative. |
| Resistance towards the Innovation |  |
| Kleijnen et al. (2009), Ram \& Sheth. (1989) and Laukkanen et al. (2007) | 7-point Likert scale: (1) strongly disagree to (7) strongly agree <br> - "I feel resistance to the product." |


| Pre-test |  |
| :---: | :---: |
| Music |  |
| Familiarity of the Music |  |
| Roehm, 2001 | 7-point scale: <br> - To what extent are you familiar with the music played in this clip? (Highly familiar / not at all familiar) <br> - To what extent do you know the music played in this clip? (Know it very well / don't know it well at all) <br> - To what extent did you recognise the music played in this clip? (Recognize it right away / don't recognize it right away) |
| Mood |  |
| Chou \& Lien, 2014 | 7 point Bipolar scale: (1) Not at all to (7) Very <br> - Happy <br> - Joyful <br> - Pleased <br> - Cheerful |
| Arousal |  |
| Thompson, Schellenberg, \& Husain, 2001 | 7-point Bipolar scale: (1) Not at all to (7) Very <br> - Lively <br> - Active <br> - Energetic <br> - Full of pep <br> - Vigorous |
| Likeability of the Music |  |
| Holbrook \& Schindler, 1989 | 7-point scale: (1) Dislike it a lot to (7) Like it a lot <br> - To what extent did you like the music played in this clip? |


| Final Survey |  |
| :---: | :---: |
| Music |  |
| Familiarity |  |
| Roehm, 2001 | 7-point scale: <br> - To what extent are you familiar with the music played in this clip? (Highly familiar / not at all familiar) <br> - To what extent do you know the music played in this clip? (Know it very well / don't know it well at all) <br> - To what extent did you recognise the music played in this clip? (Recognize it right away / don't recognize it right away) |
| Mood |  |
| Chou \& Lien, 2014 | 7 point Bipolar scale: (1) Not at all to (7) Very <br> - Happy <br> - Joyful <br> - Pleased <br> - Cheerful |
| Arousal |  |
| Thompson, Schellenberg, \& Husain, 2001 | 7-point Bipolar scale: (1) Not at all to (7) Very <br> - Lively <br> - Active <br> - Energetic <br> - Full of pep <br> - Vigorous |
| Likeability |  |
| Holbrook \& Schindler, 1989 | 7-point scale: (1) Dislike it a lot to (7) Like it a lot <br> - To what extent did you like the music played in this clip? |
|  |  |


| Final Survey |  |
| :---: | :---: |
| Dependent Variables |  |
| Intention to adopt the radical innovation |  |
| Zahid \& Din, 2019 | 7-point Likert scale: (1) Strongly disagree to (7) Strongly agree <br> - I intent to use this product in the future <br> - I will use this product in the future <br> - It is likely that I will use this product in the future <br> - I expect to use this product in the future |
| Attitude towards the innovation |  |
| Gopinath and Glassman, (2008) | 7 point scale. <br> My feelings toward the product are: <br> - Unpleasant/Pleasant <br> - Unfavorable/Favorable <br> - Dislike/Like |
| Willingness to try the innovation |  |
| Chaudhuri, Aboulnasr, Ligas, 2010 | 7-point Likert scale: (1) Strongly disagree to (7) Strongly agree <br> - I would be willing to spend time to know the product better. <br> - I would be willing to spend the effort to know the product better <br> - If asked, I am willing to test the product. " |
| Willingness to buy the innovation |  |
| Dodds, Monroe \& Grewal (1991). | 7-point scale: (1) Very low to (7) Very high <br> - Purchasing this product is <br> - The probability that I would consider buying the product is <br> - My willingness to buy the product is |
| Resistance towards the innovation |  |

Kleijnen et al. (2009), Ram \& Sheth. (1989) and Laukkanen et al. (2007)

7-point Likert scale: (1) strongly disagree to (7) strongly agree

- "I feel resistance to the product."


## Mediator

## State Anxiety

Spielberg (1970) and Marteau and Becker (1992).

7-point Likert scale: (1) Strongly disagree to (7) Strongly agree

- I feel calm
- Ifeel relaxed
- I feel contend
- I feel tense
- I feel upset
- I feel worried.


## Appendix B. Final Survey

Beste deelnemer,

Bedankt voor uw deelname aan dit onderzoek.
Deze enquête is onderdeel van onze masterscriptie. Uw antwoorden worden anoniem verwerkt en vertrouwelijk behandeld. De resultaten worden enkel geanalyseerd en verwerkt door ondergetekenden. U kunt de enquête op elk gewenst moment verlaten. Het invullen van deze enquête duurt ongeveer 10 minuten.

Faya Pijpers
Niek Klaassen
Sander Rekswinkel
Sophie ter Woerds

## Supervisors:

dr. C. Horváth
dr. S.M. Ritter

## Master Marketing

Radboud Universiteit Nijmegen

Deze vragenlijst bevat geluidsfragmenten. We vragen u naar onderstaand audiofragment te luisteren om te controleren of het geluid werkt. Klik op de afspeelknop om het fragment te starten.

## (geluidsfragment koffie)

Schrijf het woord op dat $u$ hoorde tijdens dit geluidsfragment.

## (open tekst)

U krijgt nu een video over het product Ohoo te zien. Ohoo is een eetbare waterbal die kan dienen als alternatief voor bijvoorbeeld een waterfles.
(Video Ohoo Waterbal) (Met bekende, onbekende of geen muziek afhankelijk van de versie)

## 1. Mijn gevoelens tegenover dit product zijn:

Onplezierig (o) (o) (o) (o) (o) (o) (o) Plezierig
Nadelig (o) (o) (o) (o) (o) (o) (o) Voordelig
Negatief (o) (o) (o) (o) (o) (o) (o) Positief

## 2. In hoeverre bent $u$ het eens met de volgende stellingen:

| Helemaal | Enigszins |  | Helemaal |
| :--- | :--- | :---: | ---: |
| mee | mee | Enigszins | mee eens |
| oneens | Oneens | oneens | Neutraal mee eens Mee eens |

Ik zou graag tijd willen (o) (o) (o) (o) (o) (o) (o)
besteden om meer
over het
product te weten
te komen
Ik zou graag de moeite (o) (o) (o) (o) (o) (o) (o)
willen nemen om meer
over
het product te weten
te komen
Ik ben bereid om het
(o)
(o)
(o)
(o)
(o)
(o)
(o)
product te testen,
indien dit
mij wordt gevraagd

## 3. In hoeverre bent u het eens met de volgende stellingen:

| Helemaal | Enigszins |  | Helemal |
| :--- | :--- | :---: | ---: |
| mee | mee | Enigszins | mee eens |
| oneens | Oneens | oneens | Neutraal mee eens Mee eens |


| Ik ben van plan | (o) | (o) | (o) | (o) | (o) | (o) | (o) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| dit product |  |  |  |  |  |  |  |
| in de toekomst |  |  |  |  |  |  |  |
| te gebruiken |  |  |  |  |  |  |  |
| Het is waarschijnlijk | (o) | (o) | (o) | (o) | (o) | (o) | (o) |
| dat ik dit product |  |  |  |  |  |  |  |
| in de toekomst ga |  |  |  |  |  |  |  |
| gebruiken |  |  |  |  |  |  |  |
| Ik zal dit product | (o) | (o) | (o) | (o) | (o) | (o) | (o) |
| in de toekomst |  |  |  |  |  |  |  |
| gebruiken |  |  |  |  |  |  |  |

4. In hoeverre bent u het eens met de volgende stellingen.

| Heel | Enigzins |  | Enigszins | Heel |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| klein | Klein | klein | Neutraal groot | Groot | Groot |

De waarschijnlijkheid
dat ik de waterbal
zou kopen is:
De kans dat ik
(o) (o)
(o)
(o)
(o)
(o)
(o)
overweeg de
waterbal te kopen
is:
Mijn bereidheid
(o)
(o)
(o)
(o)
(o)
(o)
(o)
om de waterbal
te kopen is:

## 5. In hoeverre bent u het eens met de volgende stelling: 'Ik voel weerstand ten opzichte van de eetbare water bal.'

(o) Helemaal mee oneens
(o) Mee oneens
(o) Enigszins mee oneens
(o) Neutraal
(o) Enigszins mee eens
(o) Mee eens
(o) Helemaal mee eens
6. Zou u kunnen toelichten waarom u weerstand ervaart? (Vraag indien weerstand ervaren wordt)
(Open tekst)
7. Selecteer de meest geschikte reden waarom u weerstand ervaart: (Vraag indien weerstand ervaren wordt)
(o) Het past niet in mijn dagelijkse leven/levensstijl
(o) Het imago spreekt mij niet aan
(o) Het product heeft te veel economische en/of financiële risico's
(o) Ik ben bezorgd dat dit product schadelijk of ongeschikt is voor mijn gezondheid
(o) Ik ben bezorgd dat dit product niet geaccepteerd wordt door mijn vriendenkring (sociaal risico)
(o) Ik hecht waarde aan mijn huidige producten (traditie)

## 8. Luister nogmaals naar de muziek uit de video: (Muziekvragen alleen voor de participanten blootgesteld aan de video met muziek) <br> (Muziek fragment bekende of onbekende muziek afhankelijk van de versie)

## 9. In hoeverre bent u bekend met de muziek uit het geluidsfragment:

Totaal niet bekend (o) (o) (o) (o) (o) (o) (o) Heel bekend

## 10. In hoeverre kent u de muziek uit het geluidsfragment:

Ik ken het totaal niet (o) (o) (o) (o) (o) (o) (o) Ik ken het heel goed

## 11. In hoeverre herkent $u$ de muziek uit het geluidsfragment:

Ik herken het niet (o) (o) (o) (o) (o) (o) (o) Ik herken het gelijk

## 12. Door deze muziek voel ik me:

| Helemaal | Enigszins |  | Helemaal |
| :--- | :--- | :---: | ---: |
| mee | mee | Enigszins | mee eens |
| oneens | Oneens | oneens | Neutraal mee eens Mee eens |


| Vrolijk | (o) | (o) | (o) | (o) | (o) | (o) | (o) |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Blij | (o) | (o) | (o) | (o) | (o) | (o) | (o) |
| Tevreden | (o) | (o) | (o) | (o) | (o) | (o) | (o) |
| Opgewekt | (o) | (o) | (o) | (o) | (o) | (o) | (o) |

## 13. Door deze muziek voel ik me:

| Helemal | Enigszins |  | Helemal |
| :--- | :--- | :---: | ---: |
| mee | mee | Enigszins | mee eens |
| oneens | Oneens | oneens | Neutraal mee eens Mee eens |


| Levendig | (o) | (o) | (o) | (o) | (o) | (o) | (o) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Actief | (o) | (o) | (o) | (o) | (o) | (o) | (o) |
| Energiek | (o) | (o) | (o) | (o) | (o) | (o) | (o) |
| Vol met pit | (o) | (o) | (o) | (o) | (o) | (o) | (o) |
| Krachtig | (o) | (o) | (o) | (o) | (o) | (o) | (o) |

## 14. In hoeverre vindt u de muziek uit het geluidsfragment leuk?

Helemaal niet leuk (o) (o) (o) (o) (o) (o) (o) Heel erg leuk

## 15. Kunt u aangeven welke emoties $u$ heeft ervaren tijdens het bekijken van de video?

| Helemal | Enigszins |  | Helemal |
| :--- | :--- | :---: | ---: |
| mee | mee | Enigszins | mee eens |
| oneens | Oneens | oneens Neutraal mee eens Mee eens |  |

Ik voelde me kalm (o) (o) (o) (o) (o) (o) (o)
Ik voelde me relaxed (o) (o) (o) (o) (o) (o) (o)
Ik voelde me tevreden (o) (o) (o) (o) (o) (o) (o)
Ik voelde me gespannen (o) (o) (o) (o) (o) (o) (o)
Ik voelde me verward (o) (o) (o) (o) (o) (o) (o)
Ik voelde me bezorgd (o) (o) (o) (o) (o) (o) (o)
16. Wat is uw geslacht?
(o) Man
(o) Vrouw
(o) Anders
(o) Wil ik niet zeggen

## 17. Wat is uw leeftijd?

(Open tekst)

## 18. Wat is uw hoogst afgeronde opleiding?

(o) Middelbaar onderwijs
(o) MBO
(o) HBO
(o) WO/Universiteit
(o) Anders, namelijk (open tekst)


[^0]:    *. The mean difference is significant at the 0.05 level

