



## Music Listening Behaviour And Ear Health Of High School Students And Undergraduates In Thailand

<sup>1</sup>Kantichakorn Kasikitkonkun, <sup>2</sup>Thanet Reantongcome

<sup>1</sup>Benjamarachutit Ratchaburi School, Ratchaburi, Thailand

<sup>2</sup>Saint Gabriel's College, Bangkok, Thailand

**\*Corresponding Author:**

**Kantichakorn Kasikitkonkun**

Benjamarachutit Ratchaburi School, Ratchaburi, Thailand

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### Abstract

This research studies Thai high school students and undergraduates' music listening behaviour with their knowledge of ear health, care and hygiene, specifically pointing out the danger and consequences from careless behaviour and the lack of knowledge among Thai adolescents. The paper contains factors, behaviours and opinions of students and undergraduates on the benefit and harm of music listening, including headphones, music volume, devices, sleep, memory, regions, and others. The paper also discussed Thailand's famous music genres, adolescents' music taste, and the current rise of music streaming services in the year of 2023. With the paper's findings, we hope this research will be impactful and later used to further improve Thai's adolescents' awareness of their music listening behaviour and prevent its harm.

**Keywords:** Music, Listening, Behaviours, Headphones, Students, Undergraduates, Factors, Songs, Benefits, Harms

### Introduction

In our current modern world, people of any age find themselves having sorts of entertainment suited to their liking. Despite the variety of entertainment ones can choose, music stands out as one of the most enjoyed by many. Music has always been part of us since birth and, with the introduction of technological advances, accessibilities to them have never been this plentiful. However, with such conveniences, it leaves a big concern of whether we have gone too far with music as our hobby. Having smartphones with us for almost all the time and speakers in various places like cars, it is rather easy to listen to music excessively without noticing nor knowing when to stop. Together with usage of headphones, the damage done by music is to be discussed.

Music, in spite of the concerns we mentioned, serves as a very beneficial aspect of our life. For instance, music serves as a stress reliever. Many listen to their

preferred songs as a coping mechanism, and therefore, help them with reflecting on their mental health. Especially in the stressfulness of our globalised world, the anxiety rate has peaked and listening to music has never been this relevant. However, as its relevance grows, it is now very easy to indulge in ones' favourite songs. Instead of music being a likeable hobby, without careful inspection, it could easily turn into harmful escapism. With excessive music listening, it has now turned into bad behaviours for our ears' health, and could lead to various ear-related illnesses or injuries.

Ear is one of the five sensory organs of our humans' body. The main purposes of our ears are to hear sounds around us through vibration and arm-to-leg coordination, which constitute how we maintain balance. Ear mainly consists of 4 parts: outer ear, eardrum, middle ear, and inner ear. If the volume of

the music listened far surpasses the optimal maximum decibel for our ears, one of the main parts of the ear could be at risk of damage and undesirable injury. For instance, common ear-related symptoms from listening to loud music include tinnitus, the experience of ringing in one's ear, and hyperacusis, the reduction of tolerance to sound. Unfortunately, the symptoms mentioned above are only the acute effects. Ear-related damages could pile up and cause chronic or hard-to-treat diseases later in life.

Our society has become more widely connected with technology and said technology comes in many different shapes and forms, one of which is headphones. The use of headphones has dramatically grown, as listening to music has become one of the most enjoyable and popular activities, especially among teenagers, which begs the question of whether headphones are a blessing or a curse. They are convenient to carry around and can be used anywhere and anytime. Moreover, headphones allow us to enjoy music without interrupting others, but this upbringing might be bad, due to how easily one can damage their own ears without noticing. In addition, headphones have various types and designs, which further complicates the subject.

Although the average number of people who use headphones on a daily basis has significantly increased because of their music behaviours, it is unclear whether the number of people who cleaned their headphones continually has decreased or not. This could lead to complications caused by bacteria which could be one of the factors causing people to get infected. In return, we would also discuss the behaviour of how one took care of their headphones and the continuity of that behaviour.

High school students and undergraduates in Thailand are the group we keen to study their behaviour the most, due to their susceptibility to follow music trends more than any other ages and their easy accessibility in our country. As members of the group mentioned, we have seen many trends and music-related behaviour that might be rooted from our culture unlike other regions. Moreover, we would like to study about the harmful effects of loud music that can result in Thai students and colleagues becoming more close to ear diseases in the future.

This research therefore aims to discuss the behavioural changes after listening to music and their

ears' health within Thai students and colleges as a result of various factors, and to further discuss the benefits and potential harms that could be caused especially within the cultural and sociological context of Thailand.

With this, we can further improve the quality of music listening for later generations and prevent serious harms that could be the result of it. Furthermore, with the ever-changing culture of Thailand, this research will be a foundation to look back on the changes of Thai students' music listening behaviour and ears' health. To conclude, listening to music is important and a vital part of one's life, but listening to songs healthily is a different topic. Thus, this research's ultimate goal is to sustainably find an optimal model for ways Thai students and colleges can have non-injurious music related hobbies, and possibly for the rest of the world.

### Review of Literature

The world changes at a rapid rate. Although progress of mankind should be celebrated, some strike us as a problem we have never seen centuries ago. Nowadays, listening to music has become more widespread for all ages. "Yutakorn Sarikakanon [23] mentioned that music listening is a significant aspect of our leisure activity. Everyone has their own way of listening to music that feels deeply to their emotions and that depends on the characteristics and mindset of individuals." "Yutakorn Sarikakanon [23], categorised ways of listening to music into 4 categories: passive listening, sensuous listening, emotional listening, and perceptive listening, all of which have differing degree of understanding and engagement in lyrics, all of which have differing degree of lyrics understanding and engagement." On the other hand, there are also various risks that can be harmful if music listeners are not precautious with their behaviours. "Due to the rise of audio-related technological devices, such as headphones and speakers, The WHO and ITU [33] claimed that people can now accidentally listen to music exceeding the maximum duration of dangerous sound volume. Consequently, these widespread practices pose a significant danger in terms of unsafe music listening." "That said, 3 major factors: loudness (how loud the music is), duration (how long do you listen to music per session), and frequency (how often do you listen to music), stated by WHO ITU's standard

for safe listening devices [33]. Furthermore, among adolescents and young adults, ages between 12 to 35 years with middle to high income countries, approximately 50% of them are exposed to unsafe volumes of music from the use of personal audio devices, such as MP3 players and smartphones.” Lastly, “WHO ITU’s standard for safe listening devices [33] provides evidence that the safe music volume for people to enjoy listening to music should be below 80 decibels at maximum and not more than 40 hours per week.” As an important sensory organ of our body, ear’s hygiene must inevitably be maintained for people regardless of age or gender. “That said, in 2006 WHO’s Primary Ear and Hearing Care book

[32] claims picking your ears with dirty fingers or swimming in an unhygienic body of water constitutes bad ear health.” Apart from basic preventions, other invasive methods of ear cleaning is also considered bad ear hygiene. “Cotton-tipped swab studies by 1947 H. Kravitz et al. [11] and 2005 Hobson J. C. et al. [6] reveals dangerous illness and injury caused by the usage of cotton buds with ears, together with ear waxing without proper guidance by 2015 Wright T. [34], ear candling by Daniel R. et al. [24] and ear picking by 2000 T. Kobayashi et al. [10].” Headphones and types of them are also important regarding this matter. “2007 William E. paper [7] states earbuds could be worse compared to over-ear headphones, as the noise-cancelling ability in over-ear headphones are better, resulting in earbuds users increasing their volume to cancel out unwanted environment sounds; therefore, putting more strain on the ears.” “2019 Sadaf Zia et al. [36] and 2023 M. Sattam et al. [22] also report hearing loss and infections within headphones users. Thus, the general guidelines of headphone usage includes cleaning it regularly [36] and prohibition of sharing headphone by 2002 R. Mazlan [15] should be followed.” “WHO Regional Office of South-East Asia claims our era has faced a concerning rise of deafness and hearing impairment, thus becoming the world’s most occurring sensory deficit as of 2005. [31].” “Together with the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR), in 2008, states the noise exposure of young adults has tripled since the 1980s. [21].” This global likeliness of ear related diseases may be the repercussion of low-quality healthcare literatures within each country,

“The key preventable contributors to deafness in the region includes mainly four factors: Ear waxing, chronic otitis media, noise-induced deafness and usage of ototoxic drugs, all of which can be easily fended off with proper knowledge and general understanding of our ears. [31].” With the rise of sound-related technologies, the physiological effects from music listening are in need of supervision. “With the growing popularity of technology advances within music products, many people gain personalised audio settings of their choices; consequently, leads to unsafe music listening behaviour as mentioned by WHO ITU’s standard for safe listening devices in 2019. [33].” Taking too much toll on our ears could form undesirable outcomes. “Kiattikhun S. [17] also wrote in a Bangkok Hospital medical journal that the tendencies and risks of tinnitus, presbycusis, sudden sensorineural hearing loss (SSNL), deafness and other anomalies emerge from people who fail to follow ears’ health guidelines above. “Many papers, including Vernon JA. et al.’s paper on tinnitus [29], also support the increased chance of getting side-effects from listening to loud music for an excessive period of time.” Despite the concerns, the rise of music also serves as a physiological advantage for Garrius. “There have been many reports about the relation between music listening and cardiac activities, namely 1997 Gwendolyn R.’s [30], 2002 Jason L. et al.’s [1], 2014 Janet E. et al.’s [13], and 2019 Martina de Witte et al.’s [2].” “Though the claims are abundant, some papers stressed the controversy of the subject [30], while some dismissed the claim of any cardiac changes. [25].” The topic of physiological effects from music therefore should be precariously handled and closely studied.

Apart from physiological, one of the most notable effects, which has been widely brought up from music studies, is psychological. “A significant decrease in stress and anxiety rate has been vastly mentioned unanimously among papers, including 2001 Wendy E. J. Knight et al.’s [9], and 2007 Labbé E. et al.’s [12].” “Moreover, negative feelings such as anger, sadness and frustration along with other psychological symptoms such as pains and discomforts are recorded to be reduced with the help of therapeutic methods related to music and sounds, even recorded to reduce the symptoms of depression stated by 2020 Qishou Tang et al. [27] and 2021

Rebecchini L. [20], with S. Garrido et al. [4] finding that some people regulates their emotion with sad music and D. Miranda [16] positive development in children and teenagers.” “Despite that, some scholars found negative effects from music, for example sad music inducing depressive thoughts by S. Garrido et al. [4].” “1999 Adrian Furnham et al. [3] also mentioned music being a distraction which makes people become less focused.” It is concluded that the majority of influences music has on people are mostly positive, but for certain people, lyrics and beats that foster their unhealthy thoughts could be a double edge sword and require a level of care depending on severity. Apart from mood, other behaviours that could be influenced by my music are also brought up. “2006 N. Stroebele et al. [26] reports an increase in food and fluid in-take with music as an environmental factor.” “Increases in sleep quality of students are also stated in 2008 papers by László H. et al. [5].” “There are also many studies about music and memory which mostly point toward their relation being positive, including Patricia Purnell-Webb et al. [19].”

Looking at cases within Thailand, we found out that “music with soothing and relaxing melodies was liked by ancient Thai people in the far past, Primrose Maryprasith [14] stated that, throughout history, listening to music played a vital role for Thai leisure activities and entertainments.” Despite that, only a portion of these ancient people had an option to listen to music on a daily basis, unlike the present. “Primrose Maryprasith [14] illustrated the Thai history of music, with how performing music was once considered a low-ranking career, while being an enjoyable hobby for the upper classes. Over time, musical performances have evolved into an accessible hobby for people with less stable financial status; consequently, music has become widespread among the larger population.” “Another sociological changes highlighted by Primrose Maryprasith [14] is, due to the globalisation from the western, there has been a separation of Thai people into 2 main mentalities: one that celebrated and welcomed foreign culture to be integrated with the locals and others that resist the change, seeing these conjugations as an invasion to their culture.” “However, during COVID-19 pandemic, Spring Yan [35] discovered that there was a growing number of music listeners due to these three main factors: an

increased leisure time spent on listening to music, escalated use of streaming services among users, and a wider exploration of various music applications.” Nowadays, there are also various cultural music trends that have been a result of other countries’ entertainment industries, known as soft power, from all over the world, especially from Korea, “Tanik Prasopsorn and Nuananong Panmanee [18] demonstrated the entertainment from Korean culture, including K-dramas, K-pop, cosmetics, clothing, idols, and cuisine have an huge impact on what is currently mainstream in Thailand.” Due to these factors, we suspected that Thai high school students and undergraduates would also be influenced by this.

Apart from soft power, recently society has been greatly influenced by technology. “Suppatin Thippayawat [28] revealed that under the impact of technological consumption, for instance smartphones and 4G internet, along with the introduction of music streaming services, the behaviours of music listeners in Thailand have shifted towards music streaming channels.” Similarly to “Rattapon Jangwan’s claims [8] about how online music streaming services have become popular for lots of consumers.” Moreover, “Suppatin Thippayawat [28] provides some reasons why music streaming in Thailand has become famous, the majority of Thai people aim to support their favourite artist. Thus, the influence of Thai music listeners is experiencing a swift surge of change and this trend is expected to continue for another 5 to 10 years.” Besides that, “Suppatin Thippayawat [28] also categorised people who pay for music streaming apps into four main types: promotion abuser, new subscriber, active user, and churned subscriber.” Additionally, “Suppatin Thippayawat [28] saw that, with the introduced membership, Thai people enjoy their music which they have downloaded from their application offline. Unfortunately, if their subscribers expire, this feature will be terminated [8].” “On the other hand, there are many people that enjoy consuming the music without subscribers [34].”

### Methodology

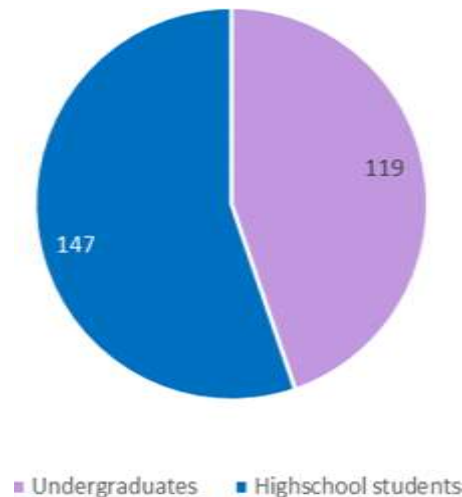
As we pursued the topic of music listening behaviours and its effects on Thai pupils, we decided to use an online survey application, which was conducted from 20<sup>th</sup> of June, 2023 to 18<sup>th</sup> of August, 2023 (a span of 60 days), as our way to approach



information. As the figure 3.1 shows, we have received a total of 250 relevant applications across Thailand and, as the differences among Thai high school students and undergraduates were concerned, the survey contains 119 (47.6%) high school

applicants (grade 10–12 and gap year students) and 131 (52.4%) undergraduate applicants (freshman to senior). The majority of the applicants is freshman with 37.2%, followed by 22.4% of grade 10 students, 18% of grade 12 and the rest with 22.4%.

### 3.1: The numbers of high school students and undergraduates partaking this survey



We categorised the data into 4 different types of curricula: public programmes, private programmes, vocational and technical education, and tertiary education. These programmes are categorised for precise observations about how the Thai educational system affects students' general knowledge of ear care and harmful effects of loud music:

- 1) Vocational and technical education is a comparable level of grade 10–12 in Thailand's education system.
- 2) Tertiary education is a comparable level of freshmen and sophomore in university programme in Thailand's education system.

The health guidelines and standards we use for determining the quality of one's music behaviour are mostly based on WHO's books and papers about ear health, hygiene, and disease prevention. Miscellaneous suggestions, warnings, and data from other papers are also used in this research, as such topics are not mentioned nor elaborated in WHO's sources, namely ear waxing, ear candling, and others.

Before taking the survey, we first asked whether the participants listened to music or not. The survey takers that answered not listening to music will not be

able to answer other music-related questions, and as a result, only 4 out of 250 survey takers answered that they do not listen to music, leaving 246 participants that we would thoroughly discuss within this paper. To gather information and analyse that data efficiently, we decided to use Google Forms as an instrument to alleviate the process of this survey and to ease the data analysis. The form consists of 38 questions, 27 of which are close-ended multiple choice questions. 4 of the questions are for personal information: age, gender, grade and types of school. The 11 other close-ended questions are used to observe each person's behaviours, feelings, knowledge about ear health, songs, and various aspects of music listening. Most multiple choice questions are yes–no questions asking the applicant whether they agree with the statement above or not, including their opinions on music and its positive effects on sleep, stress, and memory. Others have the applicants choose what option they agreed or liked most with up to 3 or more choices for the participants to decide, including the types of devices, types of headphones, and others.

With various survey tools, we have ventured many applications and services that could aid our survey

processes. Among the vast contenders, we decided to use Google Forms as our resort to gain answers from the participants due to these reasons:

- 1) The ability to directly and easily gain the data from participants based on their experiences and knowledge.
- 2) The assured high-quality, detailed and customisable survey form that is essential and convenient for creating a survey.
- 3) Features that allow us to effortlessly analyse the data and answers gained from the survey
- 4) Cost efficiency with free and accessible features, assuring great statistical information

Our statistical analysis was represented in pie charts and bar graphs. These types of presentations can easily and efficiently demonstrate the data in percentages and visual cues. Moreover, it can also clearly lay out the distribution of numerically accurate data and summarise them quickly and conveniently. We decided to use Microsoft Word to create charts and graphs, due to its various customisable choices, low learning curve, and accuracy. Apart from the two programmes mentioned, we also use Google Sheets to analyse our data, Google Docs to put our documents together, and MyBib to create our bibliography.

## Results

### *High School Students and Undergraduates Knowledge and Perspectives Knowledge About Ear Health and Caring.*

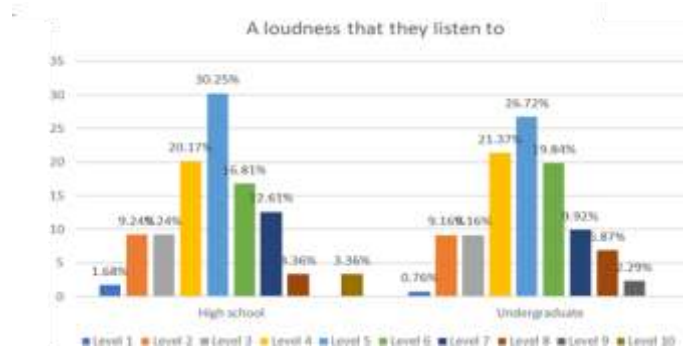
Within the surveys, 4 out of 250 participants answered that they do not listen to music. Two of them claimed that they preferred spending their free time on other extracurricular activities, namely playing games and watching movies. The other two simply stated that they do not understand the lyrics

nor enjoy listening to songs. Even though what they claimed seems relevant, we decided not to presume any further, due to lack of information and the scarce participants not listening to music taking this survey.

The survey displayed two main types of ear hygiene understanding: the maximum loudness to safely listen to, and the prevention of risky ear's related injuries of Thai adolescents. With the total of 246 participants, most high school students and undergraduates believed that the effects of loud music for an extended period of time can damage their ears, with 224 participants out of 246 answers (91.1%) agree with the statement, and the rest 22 out of 246 answers (8.9%) which do not believe loud music could harm their ears.

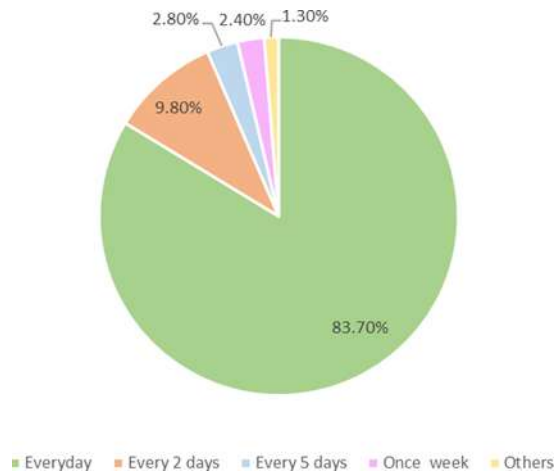
As shown by figure 4.1.1, we categorised levels of loudness into 10 levels starting from 20 decibels to 110 decibels. These levels can also be divided into three zones: safe zone, level 1 (5–20 decibels), level 2 (20–30 decibels) and level 3 (30–40 decibels); medium zone, level 4 (60–65 decibels), level 5 (65–70 decibels), and level 6 (70–75 decibels); harmful zone, level 7 (75–80 decibels), level 8 (80–85 decibels), level 9 (85–110 decibels), and level 10 (more than 110 decibels). 119 (30.25%) participants of high school students and 131 (26.7%) participants of undergraduate students prefer to listen within the range of level 5, which is a medium stage level that does not harm their ears. Within the level 1 to 4, there are 40 (33.6%) out of 119 high school students and 41 (31.29%) out of 131 undergraduates. Within the harmful zone, 11 (8.39%) out of 131 undergraduates and 4 out of 119 high school students (3.4%) are at risk of ear injuries, with 4 (3.36%) out of 119 high school students and 3 out of 131 (2.29%) undergraduates are at level 10, which is really concerning.

**Figure 4.1.1: Loudness of the music that the participants listen to**



The figure 4.1.2 shows the frequency of participant’s music listening. Most of the answers, 206 (83.7%) out of 246 participants, prefer to enjoy their music daily. Combined with the loudness discussed, the data shown are to not be overlooked.

**Figure 4.1.2: Frequency of participant’s music listening.**



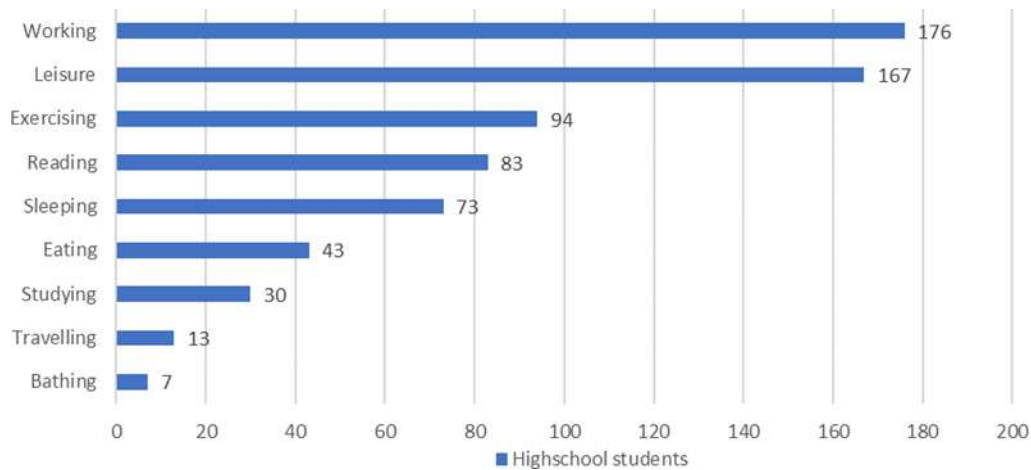
Apart from that 146 (59.3%) out of the 246 participants knew the maximum decibel level for safe music listening while the rest 100 (40.7%) out of 246 participants did not know these facts. Another significant factor which contributes to one’s ear health is headphones, with 165 (67.07%) participants who clean up their gadgets after listening to music. The topics regarding the usage of headphones will be discussed more within this survey.

***Behavioural and Emotional Patterns Derived From Music Listening, and Its Changes.***

Behaviour wise, the participants were asked what kind of activities they engage in while listening to music. The participants get to choose one or more activities, including working, exercising, reading, studying, eating, sleeping, and leisure, with an option to add an activity of their choice that is not included in the lists given above. As shown by the figure 4.2.1, working is the most engaged activity with a total of

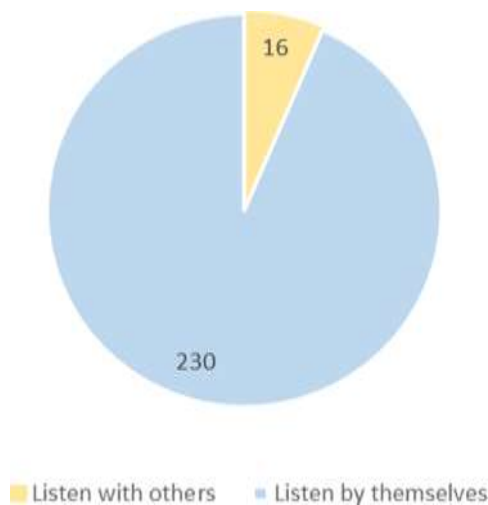
176 out of 246 participants (71.5%). Due to the works’ stressful and tedious nature, it is possible that many students listen to music as a form of escapism and to relieve the boredom of work. Followed by leisure time, with a whopping of 167 answers (67.9%), the results remain consistent with boredom affecting pupils’ music listening behaviour. Exercising, reading, and sleeping have a significant decrease in answers with 94 (38.2%), 83 (33.7%), and 73 (29.7%) accordingly, as students and undergraduates might require more focus or less distraction to do those actions, which correspond to studying and eating having 30 (12.2%) and 43 (17.5%) answers which are remarkably less than others. More activities added by the participants include bathing with 7 (2.85%) answers and travelling with 13 (5.28%) answers, both of which can be deemed as boring. Thus, boredom may be a factor that incentivises students and undergraduates to listen to music more.

**Figure 4.2.1: The numbers of participants that engage in activities while listening to music**



Apart from activities done alongside listening to music, we are also curious about the differences on how students and undergraduates choose songs or how they listen to them. We first asked whether they prefer listening to music on their own or with others. A quite unanimous number of participants answered listening by themselves with 230 (93.5%) answers while only 16 (6.5%) answers said that they preferred listening with others, listed in the **figure 4.2.2**. It is possible that students and undergraduates have a varying choice of songs dissimilar to their peers or significant others, which in turn makes them prefer listening to music on their own. Another speculation is that due to the increasing amount of alone time people might simply not be able to see each other much; therefore, they preferred spending their time with others with more significant or more meaningful activities apart from just listening to music.

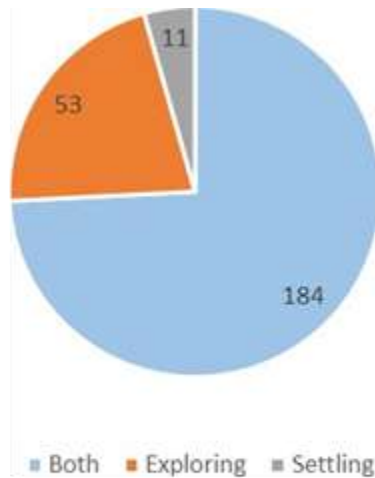
**Figure 4.2.2: The numbers of participants whether they preferred listening to music on their own or with others**



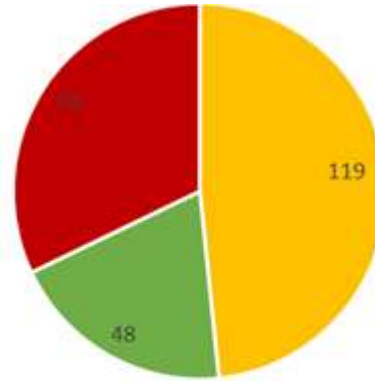
Secondly, the participants were asked whether they enjoyed exploring new songs or settling on ones that they already fancy. The results revealed that 74% (184) of students and undergraduates enjoyed both exploring more music and sticking to songs that they are already fond of. Another 53 (21.5%) of the survey takers stated that they preferred sticking to songs they already liked, while the rest 4.5% (11) answered that they frequently find new music to enjoy. After that, the participants got to answer how they chose the songs while listening to them. 19.5% (48) chose to randomly pick songs on the spot, 32.1% (79) created playlists, and 48.4% (119) claimed that they do both. Then, an optional question pertaining to where the survey takers got their playlists from was asked. The participants were allowed to choose 3 options, of which they can choose more than one. Out of 286



answers, 65% (151) fancy creating a playlist themselves, 21.6% (50) preferred getting a playlist from others, and the last 36.8% (85) have the application recommended or created for them.

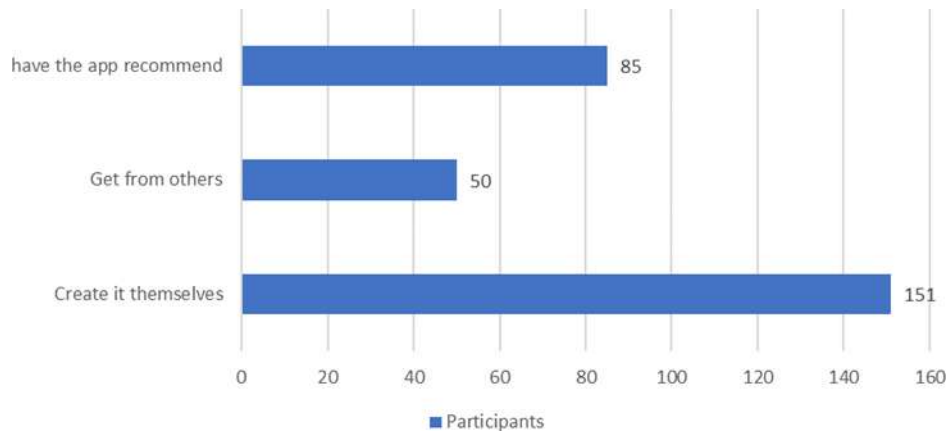


**Figure 4.2.3:** The number of whether participants preferred finding new songs or settling on one they already enjoy



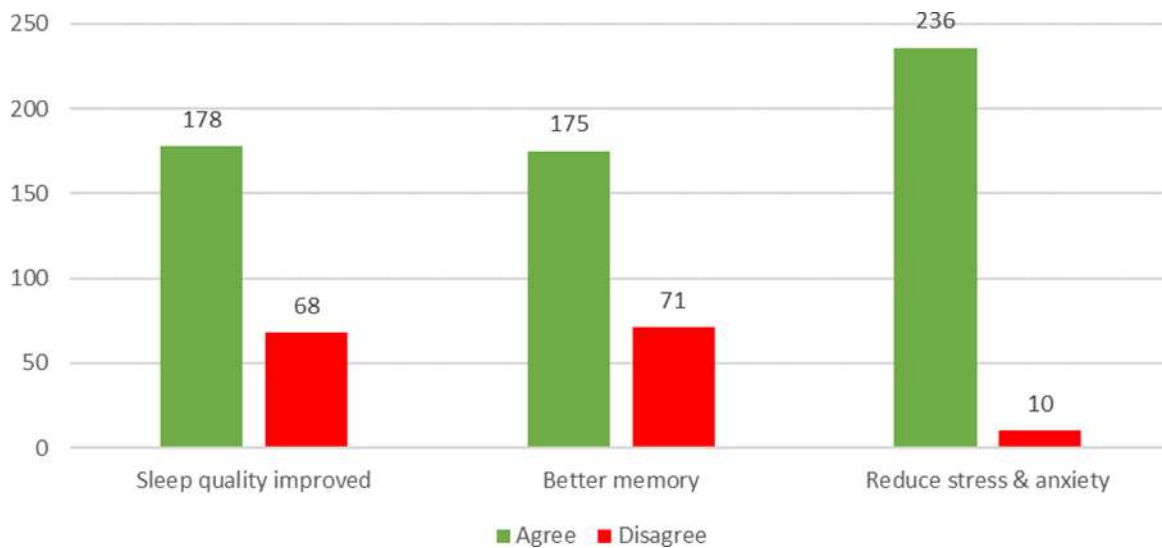
**Figure 4.2.4:** The numbers of how participants choose music to listen to

**Figure 4.2.5:** The numbers of participants whether they preferred listening to music on their own or with others



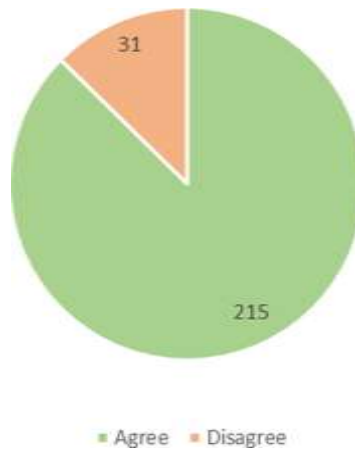
Lastly, the information on students and undergraduates’ opinions about music and its effects are gathered. We mainly give out 3 yes–no questions about side effects of music listening, as seen in the **figure 4.2.5**: increase in sleep quality, better memory, and reduced stress and anxiety. 72.45% (178), 71.1% (175), and 95.9% (236) of the participants agreed on the effects mentioned above respectively, while 27.6% (68), 28.9% (71) and 4.1% (10) participants disagreed with the statements. It is quite clear that many of the students’ beliefs are aligned with findings and papers on music and its benefit potential, yet it is counterintuitive how the majority of the survey takers do not engage in mentioned activities with music like sleeping and studying from the **figure 4.2.1**.

**Figure 4.2.5: The numbers of participants whether they preferred listening to music on their own or with others**



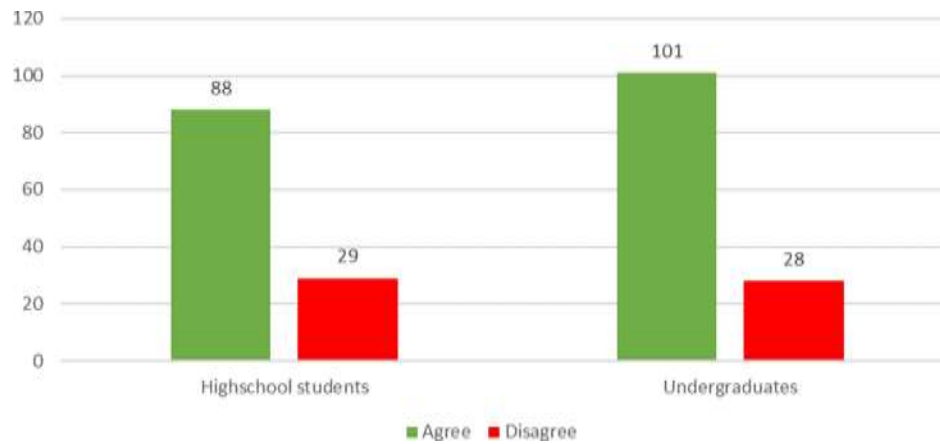
Another 2 open-ended questions were also given out. The first question asked the participants whether music has effects on their mood or not. 215 (87.4%) of the participants agreed, while the other 31 (12.6%) do not. One of the 31 opposers stated that they simply do not listen to any music when they are susceptible to emotional changes; thus, music does not have an influence on their emotions due to their avoidance. Although many students and undergraduates agree with the statements, they do to a differing degree. From 215 answers, 5 (2.3%) said that the changes are minimal to non-existent, as they do not pay attention too much to the lyrics, 55 (25.6%) answered that how music affects their emotions are largely based on the situation, their current moods, lyrics and rhythm, and 114 (53%) claims that beneficial effect happened, mostly related to lightening of the mood and increasing in focus with rarely mentioned of improved creativity and others.

**Figure 4.2.6: Opinion of participants whether music affect their mood or not**



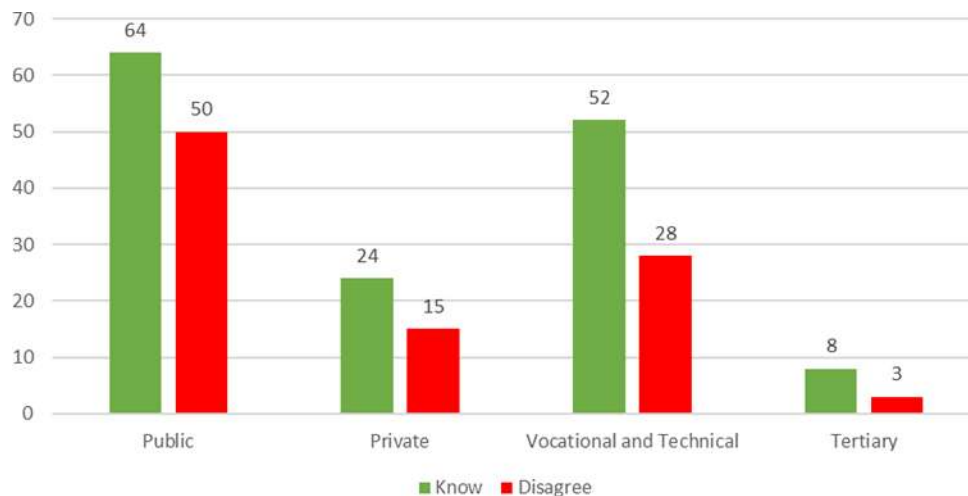
The second question asked whether music has an effect on ones' behaviour. 189 (76.8%) people agreed, and 57 (23.2%) did not. Within this question, a lot more students and undergraduates argued that, even if music influences us emotionally, it is difficult to say the same, with the physical and mental alteration. Music, similar to quite a handful of other entertainments, are short, instant-liked moments of feelings, which are easily overridden by other factors. Despite that, a considerable number of people still confirm that they perform work more efficiently and effortlessly.

**Figure 4.2.7: Opinion of participants whether music affects their behaviour or not**



Types of institution’s differences in their students and undergraduates’ music-related knowledge and behaviour. In Thailand, parents and students have various school or university options to choose from that are suited to their liking. This research, however, has separated types of educational institutions and programmes into mainly 4 categories: public, private, technical and vocational, and tertiary education. The four institutions chosen above have niche and specific criteria that fit varying types of students and undergraduates, which, in turn, could result in differing ear-hygiene-related knowledge. With a total of 246 answers, there are 114 (46.3%) participants from public institutions, 39 (15.9%) from private institutions, 80 (32.5%) from technical and vocational schools, 11 (4.8%) from technical and vocational universities, and 2 errors (0.8%). We asked these survey takers whether they know the minimum decibel for music listening or not. As shown in the figure, 54.4% out of 114, or 64 participants from public programmes said that they know, followed by private programmes with 61.5% (24 out of 39), technical and vocational with 61% (52 out of 80), and tertiary education with 72.7% (8 out of 11). With the information gathered, it is clear that due to private, technical and vocational education and tertiary’s low participation, the results are more geared towards imbalance. Although we cannot conclude the findings with other curricula, the public programme’s result turns out to be reliable with a total of 114 partaking in this survey.

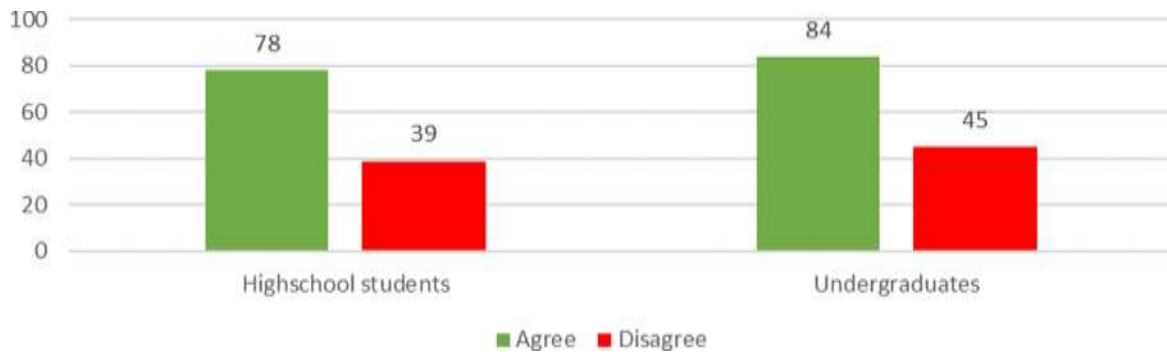
**Figure 4.3.1: Knowledge of maximum volume for safe listening across Thai’s education programmes**



**Applications, Devices, and Music-Related Services.**

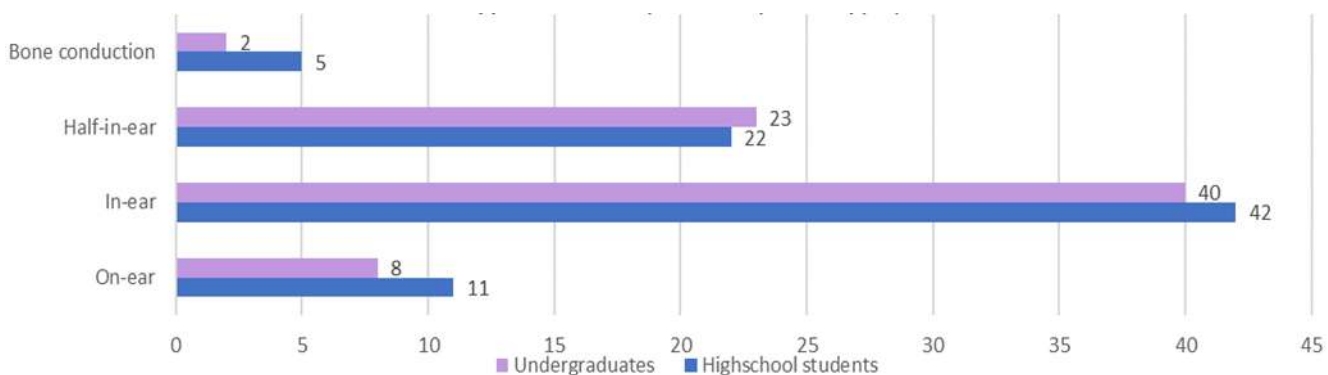
Headphones are undoubtedly one of the most popular extensions used for audio-related activities. Thus, we asked the participants about earphone-related questions, including do they typically use headphones while listening, the types of headphones they use, how often they clean them, and whether they share headphones with their peers or not. The results are as follows. 162 (65.9%) participants said that they preferred listening to music with headphones while the other 84 (34.1%) disagreed.

**Figure 4.4.1: The numbers of participants whether they prefer using headphones or not**



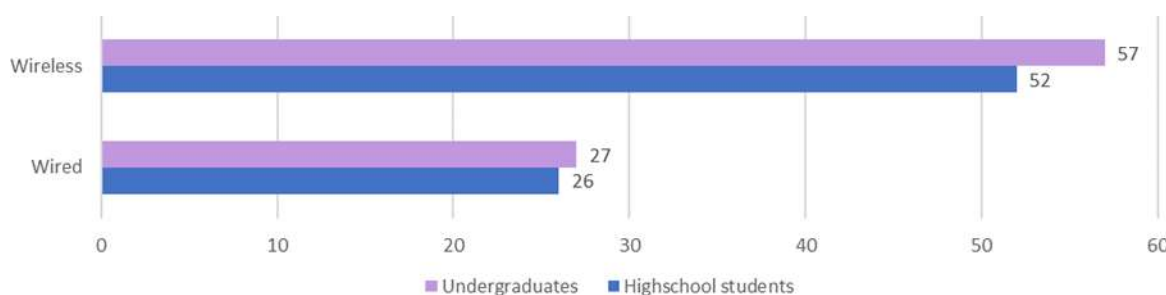
A question about types of headphones (head types) revealed that 19 (11.7%) students and undergraduates out of the 162 that used headphones used on-ear headphones, followed by in-ear headphones with 82 (50.6%) participants, half-in-ear headphones with 55 (34%) participants, and bone conduction headphones with 7 (4.3%) participants.

**Figure 4.4.2: Types of headphones (head types) that the participants use**



Another question about types of headphones (connections) revealed that only 53 (32.7%) participants used wireless headphones, while 109 (67.3%) used wired.

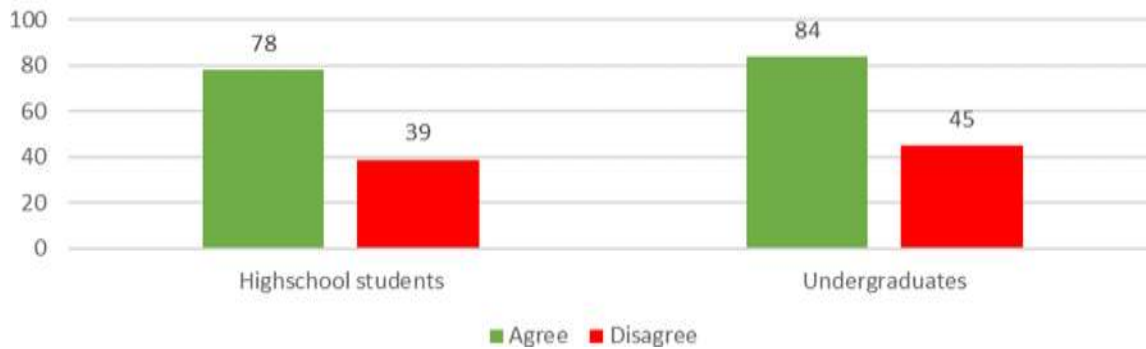
**Figure 4.4.3: Types of headphones (connection types) that the participants use**



12 (7.4%) participants said that they do not clean their headphones, other results include 36 (22.2%) participants that clean them daily, 66 (41%) participants that clean them weekly, 40 (24.7%) participants that clean the monthly, and 8 (4.9%) participants that clean them yearly.

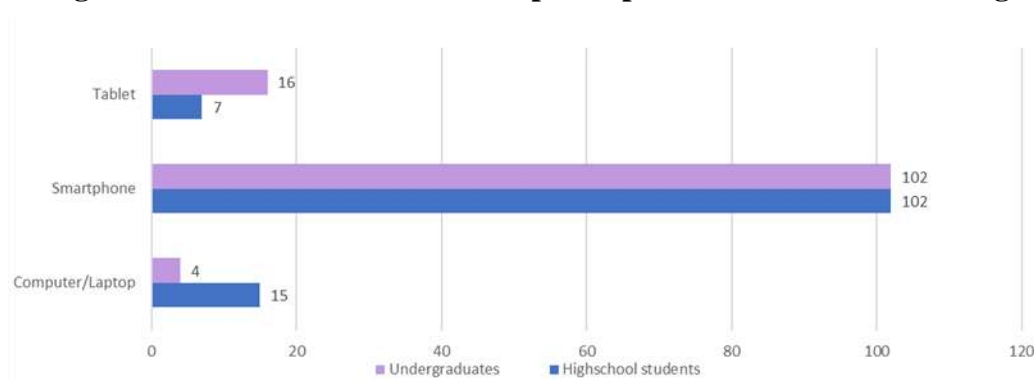


**Figure 4.4.4: The numbers of how often participants clean their headphones**



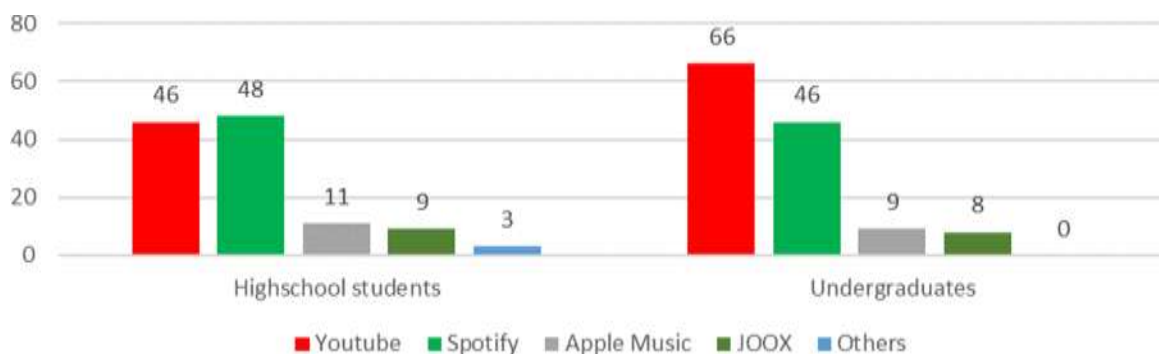
We then asked the survey takers, which electronic devices they listen to their music on. Out of the 246 answers, 19 (7.7%) listened on a computer or laptop, 23 (9.3%) on a tablet, and 204 (82.9%) on smartphones.

**Figure 4.4.6: Electronic devices the participants use for music listening**

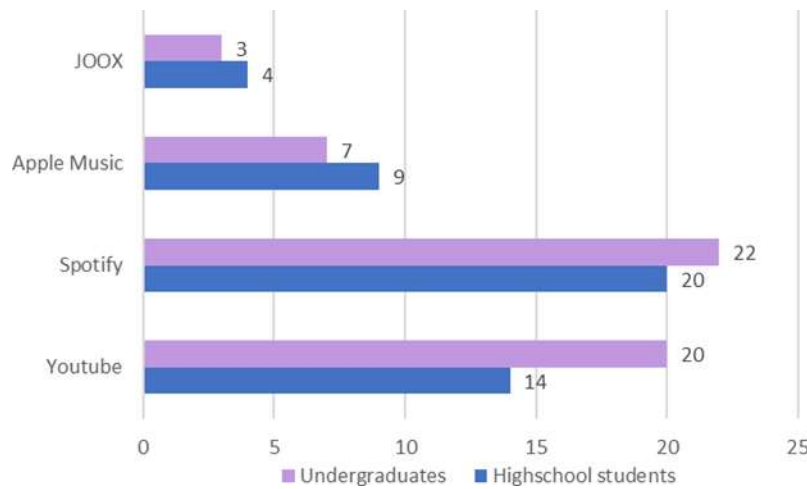


Alongside a device-related question, we also gave out what streaming service participants use and whether they paid a premium for it or not. 112 participants use YouTube. 94 use Spotify. 20 use Apple Music. 17 use JOOX. 3 use other platforms. On the matter of paid premiums, 99 (40.2%) participants stated that they do. The Students and graduates who paid premium, then, got distributed into each streaming service, including 34 participants who paid YouTube, 42 paid for Spotify, 16 paid for Apple Music, and 7 paid for JOOX. On the other hand, 147 (59.8%) said to never pay for any premium.

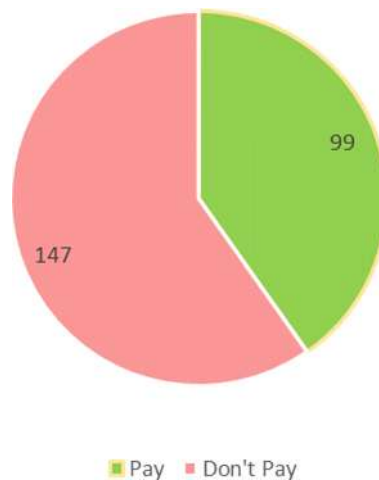
**Figure 4.4.7: Knowledge of maximum volume for safe listening across Thai's education programmes**



**Figure 4.4.8:** The number of participants that pay for premium services



**Figure 4.4.9:** The number of participants whether they pay for premium or not



***Music Genres Among Thailand’s High School Students and Undergraduates, Impacted by the Environment.***

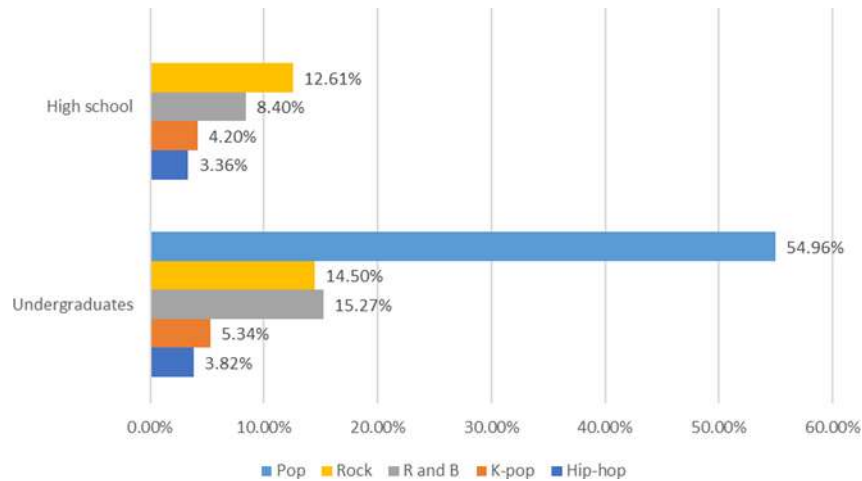
The survey revealed that the types of music genres fancy among Thai high school students and undergraduates are impacted by various environmental factors, such as artists or bands and trends. With artists and bands, the results demonstrated that there are many famous artists favoured by the participants, with 229 answers (89.5%) said they preferred certain artists, while the rest 27 out of 256 (10.6%) do not have specific artists that they fancy. We decided to look more into the data of people who answered that they have their favourite artists and found out that most of artists favoured among Thai high school students and

undergraduates are Taylor Swift, an American vocalist, (8.7%); Threemandown, a Thai pop-rock band (7%); BLACKPINK, a Korean girl group (5.2%); and Nont Tanont (3.9%), a Thai singer from LOVEiS entertainment. Within the findings, many participants stated interesting reasons why they preferred those artists. For example, Taylor Swift’s recently released March 2023 album, “Midnights,” which is frequently mentioned within the surveys. Also, Nont Tanot has just recently released his new single called “First Love” for an original soundtrack of a movie called, “My Precious,” resulting in his music frequently appearing in many social media platforms, such as TikTok. Thus, the recent trends and release of viral songs may be a result of recently released or movement of famous influencers.

As shown by the bar graph from figure 4.5.1, from 246 participants, 119 high school students and 131 undergraduates revealed that one of the most favoured music genres among Thai adolescents is pop music, with 50.42% (60 out of 119) of high school students and 55% (72 out of 131) of

undergraduates students. Apart from pop, the results among participants are as follows: rock (students 12.61% and undergraduates 14.50%), R&B (students 8.40% and undergraduates 15.27%), K-pop (students 4.20% and undergraduates 5.34%), and hip-hop (students 3.36% and undergraduates 3.82%).

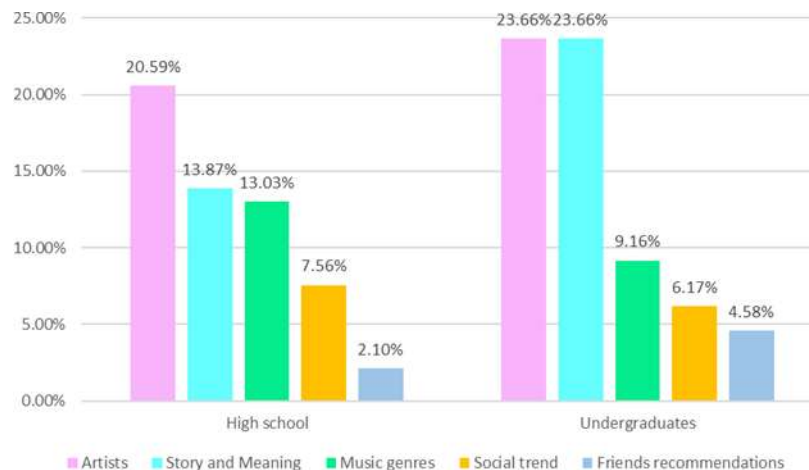
**Figure 4.5.1: Music genres that are famous among Thailand’s students and undergraduates**



As shown by this figure 4.5.2, the participants will get to answer an open-ended question about factors that influenced their choice of music. With 492 answers from 246 participants (238 answers from high school students and 262 answers from undergraduates). The results conveyed that, among high school students and undergraduates, artists are one of the most impactful influences with 20.59% of high school students (49 out of 238) and 23.66% of undergraduates (62 out of 262). For the high school students, the runner up is the story and meaning of

lyrics with 13.87% (33 out of 238), followed by music genres 13.03% (31 out of 238), social trend 7.56% (18 out of 238), and friend recommendations 2.10% (5 out of 238). Undergraduates, on the other hand, are more influenced by the story and meaning of the lyrics with 23.66% (35 out of 262). However, the remaining factors score significantly less with social trends at 9.16% (24 out of 262), friend recommendations at 6.12% (16 out of 262), and Music genres 4.58% (12 out of 262).

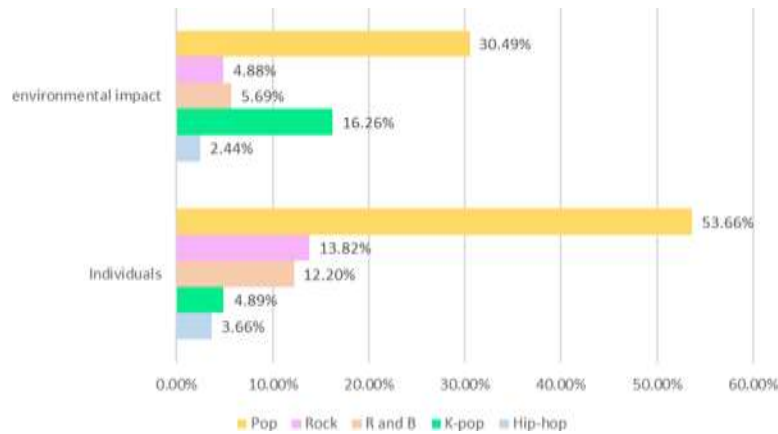
**Figure 4.5.2: Factors of choosing music**



As shown by the figure 4.5.3, we also study whether the music famous within the participants’ regions and environmental are aligned with the participants’ preferred genre. Starting with pop music having 30.49% comparable with music genres by individuals 53.66% (132 out of 246), pop music is still one of the most

influential among the genres. Other genres which are famous among individuals but are not aligned with their region includes R&B with 5.69% (14 out of 246), rock with 4.88% (12 out of 246), and hip-hop with 2.44% (6 out of 246) respectively. However, there is one single genre that is said to be famous among their region but are not favoured that much by individuals, which is K-pop with 16.26% (40 out of 246).

**Figure 4.5.3: The influence of the environment for music listener**



## Conclusions and Recommendations

Music is one of the biggest aspects of everyone's life, and Thai high school students and undergraduates are no exception. The results indicated that most Thai high school students and undergraduates listen to music on a daily basis. To further complicate the subject, only 59.3% of them, which is considerably low and dangerous on a country-sized scale, have basic knowledge about maximum loudness that can be detrimental to their ear's health. As speculated from the results about the decibel participants listened to, some of the undergraduates and students have relatively poor music and listening behaviours, which exceed safety guidelines to a concerning degree (between level 7, 75–80 decibels; to level 10, more than 110 decibels). The health and precautionary education of Thai high schools and universities about what is considered a safe music listening behaviour relying on the WHO recommendations is still inadequate, and; therefore, is in need of supervision with adjustment to the current Thai's health education curricula. In addition to the authorial changes, we can also raise awareness on the ear's health guidelines and public. With more people understanding the dire consequences of poor music listening behaviour, high school students and undergraduates could be more mindful of the loudness of music or audio they listened to. Without the precaution and knowledge needed resulting in undergraduates and high school students not

changing their behaviour of repeated exposure to inadequate, they can cause further hearing loss, tinnitus, and more worse conditions in the future.

As far as the differences of Thai educational institutions' programmes are concerned, the result revealed that there are no significant differences in the four main programmes: public, private, vocational and technical, and tertiary. Students and undergraduates from all four programmes have a similar percentage knowledge of ear's health literacy rate, which is roughly between 50–60% of all the participants. These findings stressed the importance of Thai ear health precautions and education curricula, and with the improved adjustment to the system, this would prove beneficial to the long term of Thai ear health for many generations.

In terms of behavioural and emotional changes of Thai high school students and undergraduates, due to the effects of music listening, there are a few interesting results and somewhat counterintuitive outcomes needed to be discussed. As the statistics revealed, there are few undergraduates and students who listen to music while engaging in these activities: studying, sleeping, and reading, despite the majority claiming to believe that music improves memory and sleep quality. If the participants believe that music is beneficial to their academics and sleep, why do less of them listen to music while engaging in activities mentioned above? We have suspected that,



thanks to studying and sleeping nature to have less distraction as much as possible, students and undergraduates preferred not listening to them. Although we presumed as such, the situations can also be hypothesised that the survey takers use music before or after they engage the activities to improve the quality, or efficiency of that actions. Thus, more studies in this field is required. Apart from that, the research also looked into how students and undergraduates listen to music with the majority of them enjoyed listening to music by themselves, preferred finding new songs and listening to the ones they already fancy simultaneously, favoured both picking songs randomly and making albums, and created those albums by themselves. This paper also discussed the Thai high school students and undergraduates' usage of headphones. With 65.9% of the answers claiming they preferred listening with them while others did not, we can be assured that headphones are one of the vital factors that could determine or indicate the quality of Thai students and undergraduates ear hygiene. Out of the 162 (65.9% out of 246) participants that prefer using headphones, types of them are separated into categories. From the result, it is clear that a majority of them used in-ear headphones, followed by half-in-ear. The number of participants who used on-ear and bone conduction headphones, however, are far less abundant compared to the two headphone types mentioned before. The information gathered can be considered harmful as in-ear and half-in-ear headphones sit directly in our ear canal, which can be more easily prone to infection if not careful. Together with the result on whether the participants let their headphones be borrowed by friends or close ones, the study found out that over 50% of the participants let their headphones be borrowed, which is really concerning and should be quickly agitated to prevent further damage.

We also found out that most of the participants used wireless headphones, which is surprising due to its more usual expensive market price and inferior sound quality to wired options. With the results finding that most students and undergraduates rather use smartphones as a device to listen to music, it could be predicted that they sacrificed money and the sound quality for more convenient and versatile options.

To gain more socioeconomic status of Thai high school students and undergraduates, data on

streaming services usage and premium version paid were collected. Two of the leading music streaming services are undoubtedly YouTube followed by Spotify with others streaming services, including Apple Music, JOOX and others, having remarkably less reports. Only 40.2% of the answers said to have bought the premium services, and the amount of high school students who pay is relatively the same as undergraduates. The number of undergraduates and high school students paying for premium being proportionally similar is uncalled for, since it is more likely that high school students would be unable to purchase a subscription, due to lack of money and needs of parents approval. Although YouTube is more used by the participants than Spotify, the amount of premium paid are equal for both apps, meaning that a higher percentage of Spotify users paid for premium, and vice versa for YouTube.

Among Thai high school students and undergraduates, the majority of them prefer listening to vast types of music genres, although pop music is the most listened to within this survey. Apart from genre, both the students and undergraduates mostly answered that artists, storytelling, and meaning within the lyrics have a significant influence on them, especially the artists whom the participants already fancy, or who achieve great vocal performance and attractiveness, which captivates fans of various likings and groups. However, more factors should be considered, as music components that affect listeners answered by the participants include the cover of an album, rhythm, beat, and catchiness of the lyrics. From our perspective, we have noticed that many Thai songs are not listened to as much compared to international songs. Thus, it has been proven that Thai students and undergraduates are also influenced by foreign cultures. Lastly, the environmental impact, including peers and regions, on participant's favoured music genres has a huge influence on Thai students and undergraduates. It is revealed that different and varying surroundings can play a vital role for individuals to be inclined with more vast categories of music.

Music, itself, brings so much joy and pleasure to many people with varying benefits one could gain, yet, without caution and care, the activity we held dear with appreciation turns out to be a double edged sword, especially among Thai high school students and undergraduates. Despite that, these negative

effects can be easily combated with awareness of ear's health and proper education on these matters. With authorities and individuals getting more aware of these subjects, we can help to create and bring light into these findings and further, and help create guidelines or education that could be beneficial for generations.

### Acknowledgment

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