ABSTRACT

PRIVATE SOUND ENVIRONMENTS IN PUBLIC SPACE: USE OF HEADPHONES IN PUBLIC PARKS AND PUBLIC TRANSIT

by

Chathurthi S. De Silva

The use of headphones is now so commonplace that it is almost second nature for many people to use them. Not only do these people use headphones all the time, but they use them nearly everywhere, including in urban public spaces. In using headphones, people create their own "private sound environments" in public space. This phenomenon merits attention from researchers since the creation of private sound environments may well alter people's experiences of public space.

This study answers five research questions about the use of headphones in parks and on transit: why people use them, when they begin using headphones and when they discontinue using them, what activities they engage in while using headphones, what they listen to, and how using headphones affects their experience. The study was conducted in three New York City parks - Washington, Tompkins, and Madison Square Parks - and on the PATH train that runs between New Jersey and New York City. Four data collection methods were used: focus groups, in-depth interviews, and online and on-site surveys.

Findings indicate that the reasons why people use headphones vary depending on how they use them – whether they *play* audio or *wear* them without playing audio. People play audio to reminisce and for therapeutic purposes. People wear headphones without audio for insulation in cold weather and to keep their hands free. A majority of respondents begin using headphones when they depart from their homes and discontinue using

headphones when they reach their homes or places of employment. While using headphones, people engage in various activities including relaxing, exercising, and observing surroundings. These activities vary depending on whether people are playing audio or not. For the most part, in parks and on transit, the type of audio people play on headphones is music. Respondents reported that the quality of their experiences in parks declines when they listen to audio and improves when they do not. In contrast, the quality of experience on transit improves when they listen to audio and declines when they do not.

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by
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A Dissertation
Submitted to the Faculty of
New Jersey Institute of Technology and
Rutgers, The State University of New Jersey - Newark
in Partial Fulfillment of the Requirements for the Degree of
Doctor of Philosophy in Urban Systems

J. Robert and Barbara A. Hillier College of Architecture and Design

May 2021

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USE OF HEADPHONES IN PUBLIC PARKS AND PUBLIC TRANSIT

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De Silva, C.S. (2021). Sound and the City: Using Headphones in Public Space. Paper to be presented at the Environmental Design Research Association (EDRA52) Conference, Detroit, Michigan. (Forthcoming).

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To my dearest mother (Asha), father (Sasanka), and aunt (Sharmila). With lots of love.

ACKNOWLEDGMENTS

My most sincere gratitude goes out to Professor Karen A. Franck, my dissertation advisor and committee chair. She was not only a teacher, but also a friend who always checked up on me, a cheerleader who constantly cheered me on, and a therapist when I needed someone to talk to. Karen is the greatest advisor I could ask or hope for, and I consider myself extremely privileged to have had the opportunity to learn from and work with her.

I am extremely grateful for the members of my dissertation committee - Professor Gabrielle Esperdy, Professor David Rothenberg, and Dr. Jean-Paul Thibaud - for the insightful, eye-opening, and highly constructive comments and feedback given throughout my research journey.

Special thanks also go out to Professor Hyojin Kim, Director of the Urban Systems program for her swift and unmitigated support for getting me through the finish line. I am also very grateful to Dr. Maya Gervits, Director of the Littman Architecture Library for constantly reaching out and going out of her way to make sure I had all the resources I needed for my dissertation. My sincere thanks also extends to Elizabeth Mannion from the Writing Center at NJIT for the rigorous proofreading and editing done to my dissertation proposal.

My heartfelt gratitude goes out to Mariam Abdelazim and Sedef Piker, my fellow doctoral candidates for the endless hours of chats, laughter, entertainment, and very honest advice on virtually anything under the sun and moon. Thank you for keeping me sane, checking up on me, cheering me on, and tolerating me knowing very well I know nothing about History nor Art, throughout these four years. Special thanks also go out to Mohamed Aly, Mariam's spouse, for helping me with data collection, particularly for letting me use

his Premium Zoom membership to conduct my in-depth interviews and for sending me each of the interview transcripts without grumble. Heartfelt thanks also go out to Esther Zipori and Han Yan, my fellow doctoral candidates, as well as my colleague, Betul Atasoy, for their motivation and support that got me through the past four years, and for being those that I could always count on. Special shoutout to Esther Zipori for constantly entertaining me on social media and lighting up my mood, and to Betul Atasoy for helping me with recruiting participants for the interviews.

I am particularly grateful for all those individuals who took part in my focus groups, interviews, online surveys, and on-site surveys, especially in times of the COVID-19 global pandemic, without whom this dissertation would not have come to fruition. I thank all the participants for their time and effort, and for sticking around until completion even when the questions became lengthy and monotonous.

My sincere appreciation goes to my cousin, Chamari De Silva whose continuous support and encouragement have lifted me up immensely and kept me going since I first arrived in the United States. I cannot forget my best friend, Achala Wickramasuriya for being the greatest friend anyone could ask for. Thank you for all the love, support, motivation, and positive energy. Thank you for being brutally honest and painfully real with your feedback to keep me grounded. Thank you for the hours of phone calls and the countless therapy sessions. You most certainly made my dissertation journey easier and my life in the US, more memorable.

Finally, my sincerest gratitude and appreciation go out to my mother, Asha De Silva and father, Sasanka De Silva for letting go of their dreams and sacrificing a ton so that I

can achieve mine. I cannot thank them enough in this lifetime for their unconditional love and support. I hope I've done them proud.

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CHAPTER 1

INTRODUCTION

In 2019, the headphones market in the United States recorded sales revenues of approximately 1.42 billion US dollars (Liu, 2019a). Forecasts suggest that by the year 2022, this figure will rise to a staggering 2.5 billion US dollars in the United States alone (Liu, 2019a). Similar statistics prevail globally. During the period of 2013 to 2019, global sales of headphones increased by 40%, from 286 million units to 400 million units sold (Liu, 2019b). All these statistics point to an undeniable truth – that the use of headphones is on the rise and is becoming more and more commonplace by the day. With this mundanity, headphones have become a part of most people's everyday lives to the point that it is almost second nature for these people to use them. Statistics show that in the year 2017, 31% of people in the United States indicated to have used headphones every single day (Kunst, 2019). Not only do most people use headphones on a daily basis, but they use them almost all the time, in nearly all parts of the city including in its public spaces.

With the mundanity of headphone use, there is a need in academic discourse to understand people's use of headphones particularly in urban public spaces, because the use of headphones may well be altering how people experience these spaces and hence, what they mean to them. With little to almost no empirical research extant on the use of headphones in urban public spaces, the field is in need of knowledge on the subject. It is this lack of knowledge that this exploratory study intends to fulfil. More precisely, the study addresses, for different types of urban public spaces, questions such as why people use headphones; as people approach or leave public spaces, where in the environment and

when do people begin and discontinue using headphones; what people do while using headphones; what people listen to on them; and how listening to something on headphones affects people's experiences of public spaces, while distinguishing between whether people play audio on headphones in actuality or not.

One of the main deficiencies of previous research, in addition to the fact that very little empirical research exists, is that some of the key terms that were introduced in the field of sound studies, such as the term "soundscape" for instance, have been so stretched and loosely used that they no longer refer to the original definitions of the terms. The result is a significant increase in studies purportedly to be about soundscapes, even though the contents of the studies have very little to do with actual soundscapes. The second deficiency has to do with the informality of certain key terms of the field. For instance, some of the terms that research has used to describe private sound environments which are the personal spaces that headphones create, such as a "cocoon" (Bull, 2000), an "invisible shell" (Bull, 2000), a "mobile home" (Bull, 2000), a "sanctuary" (Bull, 2000), a "mobile hiding place" (Bloch, 1986), a "personalized soundscape" (Weber, 2010) among many others, are aplenty and are all colloquial in nature. The researcher believes that this colloquiality deemed them unimportant to be used in academic discourse in a consistent manner.

The purpose of this study is to investigate people's use of headphones in public parks and public transit spaces. The study was conducted from February to September 2020 during the height of the COVID-19 pandemic in three renowned parks located in New York City – Washington Square Park, Tompkins Square Park, and Madison Square Park - as well on the PATH train operating between New York City and New Jersey. Data collection for the study took place in two phases, and employed a series of focus groups, in-depth

interviews, and surveys. The significance of this study is threefold. First, the study takes a critical stance in arguing against a key term – "soundscape" - and introduces another in place of the informal ones, one that is less colloquial, more fitting, and in line with established theories and concepts of the field of sound studies – private sound environment. Second, the study investigates the differences between the notions of 'playing' audio on headphones and 'wearing' them without playing audio. Third, the study is exploratory in nature, fulfilling the vacuum of research that the fields of sound studies and urban planning and design so lack. In a field where little to almost no information is available on people's use of headphones in public spaces, particularly in public parks and on public transit, this study contributes to reducing this gap.

CHAPTER 2

SOUND

The aim of this chapter is to provide background on the notion of sound, a critical aspect upon which this dissertation is based. The chapter begins with an elaborate description of the physical and social characteristics of sound, followed by the faculties of hearing and listening. The chapter then takes a brief glance through history, going as far back as the late 19th century, in an attempt to contextualize private listening and shed light on the series of events that catalyzed it, particularly the Electric Revolution and the emergence of sound reproduction technologies that followed. The chapter concludes by introducing the concept of private listening, followed by the appearance of what makes private listening truly possible, the object of interest of this study: the headphones.

2.1 Characteristics, Physical Properties, and Social Connotations of Sound

Sound is omnipresent, non-spatial, and all-surrounding without obvious boundaries (Jay, 1993; Yang, 2005a). Sound travels to its subjects, immerses them, and places them inside an event (Jay, 1993; Sterne, 2003). Though intangible, sound requires physical contact with the outside world (Bull, 2009; Sterne, 2003). Sound does not respect personal space, is numerous, and amorphous (Bull, 2009). Its ephemeral quality has long frustrated those who attempted to control it. Architect Rudolph Markgraf expressed his frustrations when he complained in 1911 that "sound has no existence, shape, or form, it must be made new all the time, it slumbers until it is awakened, and after it ceases, its place of being is unknown" (Thompson, 2002). In addition to this 'litany' of sound, to borrow Jonathan Sterne's (2003)

term, which make appearances in almost all sound-related literature, sound could also be broadly understood both as a physical and socio-cultural phenomenon. In its physical sense, sound is a type of wave or a vibration that takes place in an elastic medium that is governed by principles of physics (Yu, 2009). Owing to the contributions of Descartes, Mersenne, and Bernoulli, sound is often described in terms of frequencies and sound pressure levels (Sterne, 2003; Yu, 2009). The measuring of sound is typically based on sound's pressure or its intensity (Egan, 1988), which is measured in Decibels.

Sound is socially constructed. Even though sound is sometimes treated as something that occurs naturally exterior to people, it is inherently and semantically anthropocentric (Sterne, 2003). Sound is inseparable from people, and as Sterne (2003) stated, "you can take the sound out of people, but you can only take people out of sound through an exercise in the imagination" (p. 2). Adding to this, Johannes Müller aptly claimed that "without the sense of hearing with its vital endowments, there would be no such thing as sound in the world, but mere vibrations" (Müller, 1843, p. 714). Because sound is socially constructed, in addition to its physical properties, it also has social and cultural connotations. Historically, sound, particularly loud sound, evoked feelings of fear and respect in prehistoric people (Schafer, 1993). For instance, sound with high intensities such as the roar of predatory animals, the flash of lightening, and the eruption of volcanoes were regarded as being connected to events that were life threatening (Yu, 2009). For primary men, sound was often associated with tribal activities, and the loud sounds created by these activities were believed to ward off evil spirits (Yu, 2009). This association between socio-culture and sound has never been broken in the human imagination, and the fact that many religious and cultural ceremonies around the world still accompany loud

sounds bear proof to this: the practice of lighting crackers at the dawn of the New Year in Chinese and South Asian cultures is widespread for its intention of getting rid of the evil as the New Year dawns; the tradition of breaking crockery on the eve of weddings performed by many German-speaking cultures; and the breaking of a tumbler underfoot has been a part of Jewish wedding ceremonies for countless years (Schaudinischky 1976). These instances depict the social dimension of sound which has evolved with the development of human societies.

2.2 Hearing and Listening

Hearing has been construed as a physiological process based on precepts of physics, biology, and mechanics (Sterne, 2003). As a sense, hearing is both egotistical and democratic: egotistical because it draws in information without the power to be selective; and democratic because of its inability to discriminate (Simmel, 1997b). Hearing is also an extremely passive and unprotected sense that cannot be shut off at will (Schafer, 1977; Welsch, 1997). It is deemed "supra-individual," because what happens in a place can be heard by everyone in it without depriving another of hearing it (Simmel, 1997b). Unlike the eye, an ear does not have earlids, therefore its only protection, according to Murray Schafer (1977), is an intricate biological mechanism that filters undesirable sounds from desirable ones, a process Schafer refers to as "ear cleaning." However, modern times have rendered this claim invalid by the technological innovations like headphones that allow users to do just this.

Often confused with the sense of hearing is the culture of listening. Listening certainly requires hearing but it is simply not reducible to hearing. Listening is a directed

and learned activity. It is based on bodily experiences of cultures and conditions of social life. By listening, people often harness, modify, and shape their auditory perception in the service of rationality (Schafer, 1977). Historically, listening predominated seeing as the most important gatherer of information. It is said that "the one who sees without listening is more perplexed, puzzled, and worried than the one who listens without seeing" when it comes to gathering and interpreting information (Simmel, 1997b, p. 361). However, during the Renaissance, the ear gave way to the eye with the advent of the printing press and perspective paintings among other things, especially in the western world (Schafer, 1977). Social interactions between people in cities also became characterized by a significantly greater emphasis on the use of eyes than of ears, as it previously was (Simmel, 1997a). However, as Alan Burdick (2001) states, "the golden age of the ear never ended, it continues, occluded by visual hegemony" (p. 75). With the rise of modernity, this ocularcentrism was further exacerbated, and to give serious consideration to listening at the time meant that the visualist definition of modernity had to be troubled (Sterne, 2003). This ocularcentrism still prevails to the point that the sense of hearing has been so neglected and relegated as a sense that is of secondary importance (Sterne, 2003).

2.3 Sound Reproduction Technologies

Sound reproduction technologies emerged in the late 19th and early 20th centuries. Particularly during the 1930s, both the nature of sound and the culture of listening took a drastic turn with the rise of the post-industrial Electric Revolution. During this time, the nature of sound increasingly became the result of technological inventions that lead to the discovery of several new mechanisms, including the packing and storing of sound by way

of tapes, which made sound less ephemeral and more permanent (Franklin, 2000; Schafer, 1993); the splitting of sound from the original sources in which they were produced (Schafer, 1993), resulting in the amplification and extension of sound across time and space (McLuhan, 1964); and the manipulation of traditional materials of construction to control the behavior of sound in space (Thompson, 2002). The culture of listening was transformed with the innovation and widespread use of the telephone, phonograph, and radio, the three most noteworthy innovations of the Electric Revolution (Schafer, 1993); and subsequently, by electroacoustic devices such as microphones and loudspeakers that resulted in the deduction of sounds into mere electrical signals (Thompson, 2002), whose historical roots can be traced to the use of animal horns in ancient times for the purpose of amplifying human voice (Sterne, 2003). The most remarkable however, was not the revolutionary power of such reproduction technologies, but their banality, i.e. the way they got absorbed into everyday experiences (LeMahieu, 1988; Sterne, 2003). As a result, sound was reconceptualized, objectified, imitated, transformed, commodified, mass-produced, industrialized, and most importantly, reproduced (Sterne, 2003). Sound was no longer tied to its original position, neither in space nor time (Schafer, 1993). It gradually became disassociated from the spaces of production to become a "montage" (Benjamin, 1969), resulting in a phenomenon referred to as "schizophonia" by Schafer (1977), until the relationship between sound and space almost ceased to exist (Thompson, 2002). Sound also turned "acousmatic" (or *acousmatique* in its original French term) which meant that people began to hear it without seeing or knowing where it came from, or what its sources were (Schaeffer, 1966). These 'new' reproduced sounds were clear, direct, and non-reverberant than the sounds that had come before, however, they had very little to say about

the contexts, spaces, and histories in which they were originally produced (Thompson, 2002). As a result of decontextualizing sound from its 'proper' interpersonal context, reproduced sound was often denigrated as being inauthentic, disorienting, and dangerous (Sterne, 2003). However, this separation from its original sources and the reformulation of the relationship between sound and space was perhaps one of the most significant changes that sound reproduction technologies brought about.

Following the rise of sound reproduction technologies, a shift in the "cultural icons" of audition (Bull, 2009, p. 1), took place from architecture, such as Gothic cathedrals; to material objects, such as the automobile, particularly the Citroën DS, which was deemed the cultural equivalent of Gothic cathedrals (Barthes, 2002); and, much recently, to Apple's iPod, which was deemed the cultural equivalent of the automobile (Bull, 2009). This shift dramatically reduced the physical scale of these cultural icons, reduced their acoustic span, shifted power dynamics, and enabled notions of privacy (Bull, 2009) and mobility, or "*musica mobilis"* as Hosokawa (1984) called it. As a result, sound became something to be owned and travelled with (Bull, 2009). With this shifted power dynamics, true power no longer remained in the hands of those who were able to make the loudest sound, such as in the case of Gothic cathedrals, whose bells were regarded as the loudest man-made sound that people regularly encountered (Bull, 2009). Rather, power transferred to those who now had the ability to make sound without censure (Schafer, 1993). This shift that sound reproduction facilitated has given rise to a new kind of 'powerful', in a sense ubiquitizing the notion of power. This new powerful are those who are able to not only counter communal sounds, but also those who are able to produce their own, thus and personalizing what they hear: the private listener.

2.4 Private Listening

Jonathan Sterne (2003) ties the origins of people's impulses to privatize their previously public sound environments to the early communication technologies of the 19th century Electric Revolution: the telephone, phonograph, and the radio. Georg Simmel (1997a) attributes these impulses to the institution of public conveyances, since, according to him, prior to the establishment of busses, railroads, and trains during the 19th century, people were never in a position to be in the presence of strangers for long periods of time without exchanging words. Sterne (2003) argues that this impulse to privatize stemmed from the desire for individualization and ownership of the auditory spaces, which could be achieved by simply owning the medium or the material component that produced the private auditory space. This "auditory field" or sound environment (Sterne, 2003) became a form of private property, a space for the individual to inhabit alone. However, private auditory fields (for instance, the automobile) once were a luxury that only the bourgeoisie could afford. This was democratized eventually in the 20th century as communication technologies such as the radio, telephone, and phonograph became commonplace (Bull, 2009). Yet, practices of privatizing the auditory environment have found to predate the invention of communication technologies (Bull, 2009). Subsequent to these 19th century technologies, a new wave of personal sound unfolded in the 1980s with Sony's Walkman. For the first time in history, listening could be truly portable and private, which was a liberation from home stereos (Loeffler, 2019). The newest wave in private listening of the 21st century is Apple's iPod, which has transformed the meaning of living in an urban culture to one that is "hyper-post-Fordist" (Bull, 2009), where people construct their own personal schedules of their daily lives.

Regardless of what device is being used to playback audio recordings - whether it is a Walkman, iPod, or mobile phone - what makes portable private listening really possible is an output hardware device commonly known as headphones. Throughout this study, the term *headphones* will be used as the overarching term to refer to all active hearing devices that enable private listening. Though headphones are a very specific type of private listneing technology, for the purposes of this study, *headphones* will also include earphones, earbuds, hearables, and any other type of active hearing devices. Headphones are primarily of five types (*The 5 Types of Headphones (+ more) You Need to Know About*), however, they can be secondarily categorized based on functionality (active and passive), type of connection (wired, including jacks and optical cables, and wireless, including Bluetooth technology), and earcup design (closed back and open back). This study is not concerned with this secondary classification of headphones and has been discussed here merely for informational purposes. Reverting to the primary categorization of headphones, the first type, circum-aural, refers to headphones that have large earcups that enable the entire ear to be engulfed (see

Figure 2.*1*). Second are supra-aural headphones, otherwise known as on-ear headphones. These have smaller earcups and thus do not engulf the ear in its entirety, rather, these rest on top of the ear (see

Figure 2.*1*). Third are earbuds (Figure 2.2), popularized by Apple's iPod, that do not enter the ear canal, but rather, rests at the entrance of the ear canal when worn. Fourth are earphones (Figure 2.2), which are almost the same as earbuds, however, the significant difference between the two is that the earphones enter the ear canal rather than resting outside of it. Last are bone conduction headphones, which are a relatively new and healthy alternative to listening to music in the long run (Figure 2.3). Bone conduction headphones attach to the user's skull on top of the ear and transmit vibrations to the eardrums through the bones of the skull rather than through the ear canal, like other types of headphones do.

Figure 2.1 Left, Bose QC 35 II circum-aural headphones. Right, Sony WH-CH510 supra-aural headphones.
Sources: www.bose.com and www.sony.com, accessed December 14, 2019.

Figure 2.2 Left, Insignia earbuds. Right, Beats X earphones.
Sources: www.insigniaproducts.com and www.beatsbydre.com, accessed December 14, 2019.

Figure 2.3 AfterShokz Trekz bone conduction headphones.
Source: www.aftershokz.com, accessed December 14, 2019.

"A modern technological prosthetic, headphones are quite literally a bracketing of the world for a precise analysis of sound" (Stankievech, 2007, p. 5). Continuing the techniques of isolation and amplification first fostered by the use of stethoscopes (Stankievech, 2007), headphones are a modern day substitute for the home and the automobile as a creator of personal space (Bull, 2009). Headphones consist of a pair of small loudspeakers that convert electrical signals to sounds, which when worn, enables the user to privately listen to audio recordings. Although the use of headphones may seem novel, the technology has been around for centuries though slightly different by today's standards. The very first headphones that were ever made were called Electrophones (see Figure 2.4), a device built in the 1890s in the United Kingdom that allowed users to dial to a switchboard operator who would then connect them to live performances taking place in London (Loeffler, 2019). The Electrophone company gained popularity over the years, but was shut down in 1925 due to the growing ubiquity of wireless radios (Loeffler, 2019). In 1910, on the other side of the Atlantic Ocean, Utah-based electrical engineer Nathaniel Baldwin, in an attempt to amplify the sound of sermons at his local Mormon temple, created a device that functioned without electricity (Figure 2.4). This design incorporated

earcups and set the precedent for the earcups of headphones today (Loeffler, 2019). The design took off from there, with multiple companies inventing other similar devices. The next significant milestone in the history of headphones takes place in 1958 when musician John Koss invented the first ever pair of stereo headphones (see Figure 2.5). Headphones, which were previously meant exclusively for radio communications changed course towards commercial uses intended for listening to music with this invention. Koss's headphones turned out to be incredibly popular and were specifically marketed for younger music enthusiasts (Loeffler, 2019). The next major milestone was in 1968, when the Sennheiser headphone lost the thick foam cup previous headphones had to include an open, lighter, and less-bulky design (Figure 2.5). They became instantly popular, sold by the thousands and became the default headphone design for more than a decade (Loeffler, 2019).

Figure 2.4 Left, the Electrophone. Right, Nathaniel Baldwin's Type C headphones.
Sources: Digital Scholars at Rochester and HiBid Auctions, accessed December 10, 2019.

Figure 2.5 Left, John Koss's SP/3 stereo headphones. Right, Sennheiser HD414 headphones.
Sources: www.koss.com and www.spares.sennheiser.co.uk, accessed December 10, 2019.

In 1979, the world of headphones was taken by storm with the invention of the personal stereo by Sony, otherwise known as the Walkman, which, for the very first time enabled portable listening – a liberation from home stereos (Figure 2.6). This made headphones more ubiquitous. The same year while the Walkman was revolutionizing the listening culture, Dr. Amar Bose, the founder and chairman of Bose Corporation, invented headphones with a new kind of technology that was inspired by the low-quality headphones distributed to passengers during air travel (Figure 2.6). Bose's noise cancellation headphones, which were originally made for pilots, made their way to commercial markets in 2000 (Loeffler, 2019). In 2001, Apple introduced the iPod MP3 music player, which came with the famous earbuds (Figure 2.7). Although Apple did not invent the earbuds or the earphones which came subsequently, they certainly did popularize them, making them

the default headphone design for the next decade, launching millions of knock-offs in the process (Loeffler, 2019). About a century after being invented, commercial headphones began to go wireless with the advent of Bluetooth technology (Loeffler, 2019). In 2012, Apple redefined their previous headphone design with the launch of the new wireless ear pods, commonly known as the AirPod (Berkman, 2012), popularizing wireless headphones today (Figure 2.7).

Figure 2.6 Left, Sony's TPS-L2 (Walkman). Right, Bose QC 25 noise cancelling headphones.
Sources: www.retrospekt.com and www.bose.com, accessed December 12, 2019.

Figure 2.7 Left, Apple's iPod. Right, Apple's AirPods.
Sources: www.cnet.com and www.apple.com, accessed December 12, 2019.

CHAPTER 3

SOUND IN PUBLIC SPACE

While the Chapter 2 shed light on aspects of sound, hearing, and listening in a context-neutral sense, this chapter attempts to give an understanding of sounds in light of public spaces. Starting off with an introduction to public spaces by highlighting several key definitions that served as inspiration for selecting suitable sites to carry out this study, the chapter then goes on to discuss sound in the context of public spaces. At the outset, this section includes a series of definitions of a term that is critical in understanding sound in public spaces - *soundscape* - followed by a comprehensive review of research of people's expectations and preferences of sound in public spaces. The chapter concludes with a detailed review of people's experiences of sound in public spaces by focusing on the differential affective and behavioral responses to sound.

3.1 Public Space

Public spaces are those spaces in the physical environment that are associated with public meanings and functions (Madanipour, 2003). They are concerned with people, both as individuals and as groups, and attempt to cultivate a sense of community. Public spaces are open or available to all, enabling high densities of people to simultaneously congregate to use these communal spaces regardless of their social positions (Iveson, 1998; Madanipour, 2003; Walzer, 1986). Public spaces are important sites for the peaceful coexistence and impersonal encounters amongst people (Walzer, 1986, p. 470). They provide opportunities for multiple social groups to interact and mingle so that the true diversity of public spaces

can be experienced by everyone (Iveson, 1998). However, with the growing proliferation of media and associated devices such as mobile phones, iPods, and headphones to name a few - which Mack Hagood refers to as "soundscaping devices" (2011) and subsequebtly, "orphic media" (2019) - the latter inspired by Greek mythology, particularly from the Greek musician-priest Orpheus who fought sound with sound in order to create better and safer spaces - the social role of public spaces has been changing (Hatuka & Toch, 2016). With the growing popularity of "orphic media", the reliance of people on them has made them inseparable and over reliant. As a result, activities that once took place in the private realm, such as listening to music, began to take place in the public realm, especially in public spaces. With these rather new private activities now taking place in public spaces, the public nature of public spaces has been transformed to become more impersonal and transient (Madanipour, 2010; Sennett, 1976). Because people's behaviors, reactions, and experiences depend on how much they are obliged to be in connection with their environments and the social contexts in which they are embedded (Goffman, 1963), these alterations to the nature of public spaces have various effects on people.

Public spaces take a variety of types. This study is particularly in favor of the classifications put forward by Michael Walzer (1986) and Michael Bull (2000). Walzer (1986) classified public spaces as primarily being either "single-minded" or "open-minded" based on the number of uses for which a space was intended. Single-minded spaces, according to Walzer (1986), are those spaces that are intended only for one type of use. These are spaces like shopping centers, government complexes, dormitory suburbs, highways, and spaces of public transit including buses, subways, and commuter trains. These spaces serve purposes that are known in advance by the people. Therefore, these

spaces are entered in to and are used by the people in a hurry or with a sense of urgency (Walzer, 1986). Open-minded spaces are in stark opposition to these single-minded spaces. Open-minded spaces tolerate a large variety of uses and users (Walzer, 1986). Typically, outdoor public spaces of the city - such as streets, parks, and squares - are regarded as being open-minded. Because they accommodate a variety of uses, the purposes these spaces serve are not known in advance by the people. Therefore, a sense casualness followed by frequent loitering can be commonly observed among the users (Walzer, 1986). The second classification this study is in favor of is put forward by Michael Bull (2000). Although not explicitly a classification, Bull (2000) describes two types of urban public spaces based on the notion of time and how time is appropriated: "freely chosen spaces" and "routine spaces." The first type of spaces are those spaces that people freely choose to be in, such as public parks or squares. Being in these spaces is not seen as a theft of one's time, instead, one's presence in these spaces is seen as a circumnavigation of their mundane "linear" time, to borrow Lefebvre's (2004) term. By being present in these spaces, people feel as if they own not only the space but also the time. Routine spaces, on the other hand, are spaces that people occupy for mandatory or routine purposes. These are spaces like shopping centers or transit spaces like buses, trains, or subways. The decision to be present in these spaces is not freely made and hence is not a choice, but rather made mandatory but necessity. Thus, time spent in these spaces are seen as a theft of one's own personal time.

While these classifications are certainly not the only ones out there and perhaps not even the most regarded in the locus of public space literature, for the purpose of this study, they seemed to be the most fitting. What is fitting about these classifications is that each highlights the existence of opposite kinds of public spaces in cities. It is this classification

that helped the researcher identify the study sites - a public park and a transit space - which in and of themselves are also in a sense opposites of one another.

3.2 Public Sound Environments

Having explained what public spaces are, this section now discusses in great detail the sonic environments of these public spaces.

3.2.1 Soundscape

The term “soundscape" could be understood as the scape formed by sound. In the past, scholars of different fields have understood the soundscape in multiple ways, often focusing on its multiple characteristics. Musicians thought of soundscapes as cross-sections of music domains (Schelemay, 2001), acousticians referred to them as being a mix of ambient sounds and sound effects that contribute to the creation of aural environments (Truax, 1978), and linguists believed that they were the subjective effects of complex sounds that relied on semantic attributes (Dubois, 2006). “Soundscape” was first coined in academic discourse in the 1960s by the Canadian musician and composer R. Murray Schafer, in his early attempts to draw attention to the sonic environment of Vancouver. In his book *The Tuning of the World*, Schafer (1977) claimed that the term refers to a subjective sonic environment with an emphasis on the way the sounds are perceived and understood as a whole physical phenomenon by individuals or by a society (Schafer, 1977). This definition hints that a soundscape does not have to be large in scale, in fact, it is scale-independent and could be used to refer to not just an acoustic environment of say, a city, but for “just about any acoustic field of study such as a musical composition or even a radio program” (Schafer, 1993, p. 7). In fact, what is important about a soundscape is not its

mere existence or its scale, but its ability to communicate information to listeners (Truax, 1984).

Schafer's definition of a soundscape remains widely cited and just as widely contested today, almost four decades since it was put forward. Though widely cited, one could say that this term, soundscape, has been so misused and misapplied that it no longer refers to what Schafer originally meant. A large portion of the misuse of the term could be attributed to Schafer's rather broad statement that a soundscape could be "just about any acoustic field of study" (Schafer, 1993, p. 7). In Ari Kelman's (2010) words, "Schafer's vast and slippery explanation of the soundscape offers little or no workable model for studying the social life of sound. The eponymous book is at times polemical, at times broadly historiographic, and at times dreamily theoretical. It confuses sound and listening, it is rife with odd contradictions, and it bears a strong bias against recorded music of all kinds, even though Schafer himself was involved in and urged others to pursue the recording and cataloguing of sound" (Kelman, 2010, p. 228). Perhaps it is this ambiguity of Schafer's definition that made his work so popular. In its near ubiquity, the term has come to refer to almost any sound experience in almost any context. Even soundtracks that could be heard in public buildings, and most interestingly, private mobile sound environments created using portable MP3 players, have been identified as soundscapes (Kelman, 2010). However, Schafer's definition of a soundscape encapsulates something far more specific. His definition is lined up with information about which sounds matter and which do not, which is deeply informed by his personal preference for some sounds over the others. Schafer's soundscape "is about the sounds that matter, and in order to reveal them, it may be necessary to rage against those that do not" (Schafer, 1993, p. 13).

His definition also includes instructions for people on how they ought to listen. According to Schafer, the only hope for those living in noisy urban conditions is to become better listeners by way of "ear cleaning." He coffe the kind of listening that is geared towards orchestration rather than engagement (Kelman, 2010), and for this reason, Schafer's soundscape merely represents background sounds, which he identifies as something that should be overcome, rather than something to be listened to. In suggesting that the landscape should be divided into further scapes to include the soundscape, and by awarding separate agency to acoustic phenomena, anthropologist Tim Ingold states that Schafer contradicts his own claims on the ecological importance of soundscapes (Fowler, 2017). However, Murray Schafer's soundscape captures far more than a simple definition. And for this reason, some (Fowler, 2017) regard it more as a theory of soundscapes rather than mere a defintion.

Although Schafer's definition is the best known, it certainly is not the first to grace the field. In 1969, just a couple of years before Schafer made his contribution, Southworth (1969) defined a "sonic environment" (not a soundscape) as the aggregation of acoustic properties of cities that help people relate to space and to activities that occur within the said city. Over the years, many researchers have put forward various definitions of soundscapes referring to the inclusion of biophony (sounds created by biological organisms), geophony (non-biological ambient sounds), and anthrophony (man-made sounds) that create various acoustic patterns in space and time. The most recent attempt though that has received just as significant recognition as Schafer's work was put forward by the International Organization for Standardization (ISO) in a standard released in 2014. This standard, ISO 12913-1:2014, defined a soundscape as "an acoustic environment that

is perceived, experienced, or understood by a person or people in context" (International Organization for Standardization, 2014). In other words, a soundscape is a perceptual construct that is related to but distinct from its physical counterpart, the acoustic environment. Work on this definition began in 2009 for the purpose of systematizing data collection processes in soundscape-related empirical studies so that findings would be globally consistent in environments and contexts that are alike (Brooks & Schulte-Fortkamp, 2016). This systematization of data collection, especially of perceptual data, was meant to improve the perceived sonic environment in a variety of ways (Brooks & Schulte-Fortkamp, 2016). Though it is not clear how this definition was arrived at, or the context in which it was developed given the almost non-existent amount of details on the subject, it appears that the work of Murray Schafer (1977) and Barry Truax (1978) have played a significant role in its formualtion.

Despite all this, perhaps the most simplistic characterization of a soundscape was put forward by Emily Thompson (2002), who does so, interestingly, by comparing a soundscape to a landscape, just as Schafer (1977) originally did. According to Thompson, like landscapes, soundscapes are simultaneously a physical environment and a way of perceiving the said environment. A soundscape is both a world and a culture constructed to make sense of the world. The physical aspects of Thompson's (2002) soundscape consist not only of sounds themselves or of the waves of acoustical energy permeating the atmosphere in which people live, but also of the material objects that create and sometimes destroy those sounds. The cultural aspects of Thompson's (2002) soundscape incorporates scientific and aesthetic ways of listening, a listener's relationship to the environment, and the social circumstances that dictate who gets to hear what. Soundscapes, just like

landscapes, have more to do with civilization than with nature, and are constantly under construction and always undergoing change.

3.2.2 Soundscape Planning

Thompson's (2002) juxtaposition of soundscapes against landscapes can be taken to another level by understanding that soundscapes, just like landscapes, require proper planning and design. In fact, one of Murray Schafer's larger goals was to define and examine the qualities of soundscapes and identify whether recurring patterns existed in them that hinted towards the possibility of planning and designing them (Fowler, 2017). The planning of soundscapes involves the design and management to manipulate the acoustic environment of a place in a way that results in improved human perception (Pouya, 2017; Yu, 2009), which, not surprisingly, has been overlooked in urban planning and design (Bruce et al., 2015). Even in the extremely rare occasions that the sounds of urban areas have been taken into account in the planning praxis, these considerations have usually been relegated to notions of noise abatement and the stipulation of legally binding noise levels (Rehan, 2016). However, not all sounds heard in cities are noise that need to be abated or legislated. Some sounds fit well into the context of cities and are important for its functioning. These sounds need to be preserved or even emphasized rather than being suppressed. This is where soundscape planning comes into play. Soundscape planning should be understood as complementary to noise management, abatement, or control, because of the significant differences that lie between noise control and soundscape planning in the locus of application. Soundscape planning and design takes on a more holistic approach, taking into account the relationship between the person, the sound environments, and the society (Kang, 2011). It represents a timely paradigm shift in that it

considers environmental sounds as a resource rather than a waste (Brown, 2004; Kang, 2011).

Though as a prospect, soundscape planning seems more promising than noise abatement and control, a perusal of soundscape research tells a different story. Over time, as the physical nature of sounds changed, so did the attempts to manage them. The most obvious way to manage loud urban sounds was to make places seem quieter by abating noise, which was the most common progressive reform to enforce quietude in cities, that involved stipulating legislations (Hellström et al., 2014; Thompson, 2002). Noise abatement strategies typically followed one or more of the following three courses of action: control at the source, management of the transmission path between source and receiver, or protection of the receiver (Hedfors, 2003). First, control at the source has typically been achieved by stipulating legally binding noise limits and imposing speed limits on streets (Hellström et al., 2014). Second, the transmission path has been managed by an array of strategies including the introduction of urban furniture such as lamp posts (Kang, 2011), fences (Kang, 2011), noise barriers (Echevarria et al., 2017; Kang, 2011; Rehan, 2016), benches (Kang, 2011), telephone booths (Kang, 2011), bus shelters (Kang, 2011), and sound systems that projected desirable sounds (Hellström et al., 2014). In addition, in public spaces like parks and squares, replacing paved surfaces covered by hard materials with those that can absorb sound has been found to be sonically effective (Rehan, 2016). Gravel surfaces have been associated with the worst soundscape quality, while grass surfaces have been found to be the best (Francesco Aletta et al., 2016; Fuda et al., 2015). Adding water features such as fountains is also effective, especially in moderating annoyance caused by traffic sounds (Leung et al., 2017; Rehan, 2016). Further, introducing

vegetation on building façades, roofs, and ground surfaces has been found to diffuse incident sound, which further reduces noise levels (Kang, 2011; Rehan, 2016). However, most such noise abatement efforts are often circumscribed by safety concerns, the expenses involved, and visual aesthetics (Hellström et al., 2014). The importance of taking into account the visual consequences of such noise reduction strategies has also been studied (Echevarria et al., 2017; Rehan, 2016). Third, when it comes to protecting the receiver, the responsibility of taking suitable precautions reverses and falls on the receivers themselves. Often, based on the researcher's observations and experience, adopting certain behavioral traits - such as the avoidance of areas with loud/certain urban sounds - has been observed to take place. However, perhaps the most common measure taken to combat loud and unpleasant urban sounds is the use of headphones (Bull, 2009).

In addition to noise abatement, the promotion for the widespread establishment of quiet areas as a way of combatting loud and unpleasant urban sounds has been on the rise. A quiet area is an area that is quieter than its surrounding and has psychologically restorative effects on people visiting it (Botteldooren & Coensel, 2006). The soundscape of a quiet area is one that arouses the perception of silence, yet is combined with a limited number of disturbing sound events (Botteldooren & Coensel, 2006). These sound events could be natural or location-typical and are assumed to accentuate quietness rather than to jeopardize it; however, users have found to be more accepting of the soundscape if these sound events were mostly natural ones (Rodrigues, 2018). Studies of quiet areas (Rodrigues, 2018) often identify urban parks as quiet areas. However, it is important to note that not all urban parks are quiet areas and not all quiet areas are urban parks. For instance, the study by D'Alessandro et al. (2018) investigated a university's outdoor area

that was used by students not just for relaxing but also for studying, thus deeming it a quiet area. Quiet areas have been increasingly gaining attention as something to be preserved for reasons other than quietude. For those living in urban agglomerations, quiet areas are places where people can temporarily recover their health if exposed to harmful effects of daily life (Brambilla & Maffei, 2006). They help escape pollution and increase the economic value of surrounding agglomerations (D'Alessandro et al., 2018). Quiet areas are also essential for those engaging in leisure activities (Rodrigues, 2018). For these reasons, Franklin (2000) emphasizes the importance of instigating "quiet rooms" in public buildings and "silent commons" in cities (p. 16). In addition, the designation of selected train compartments as "quiet cars" on certain train services has been on the rise in attempt to provide aural refuge to commuters (Atkinson, 2011). Along these lines of promoting quietude, mobile applications have been developed such as the Hush City app that crowdsources information about locally available quiet areas. It helps users identify everyday quiet areas in neighborhoods so that they can "escape the city's chaos, relax, read a book, play with your kids, and have a pleasant conversation" in these spaces (Radicchi, 2017).

3.2.3 Sound Expectations and Sound Preferences

Soundscapes are cognitive constructs that have little to do with their physical counterpart, the acoustic environment, and more to do with their perceptual counterpart. Soundscape planning involves the design and management of soundscapes for the purpose of manipulating the acoustic environment in a way that results in improved human perception (Pouya, 2017; Yu, 2009). In order to improve human perception, it is first necessary to

know what people's expectations and preferences are pertaining to the soundscapes of spaces.

Expectations are the anticipation of a series of events prior to experiencing them in actuality - a stereotype describing what an environment should be like rather than what it actually is (Bruce et al., 2015). Sonic expectations are no different. They are influenced by people's moods, activities, prior experiences, and environmental changes such as climate, time of day, week, or even year (Bruce et al., 2015; Bull, 2009). Sonic expectations vary from place to place and are highly individualistic, though recurring themes have been observed by researchers (Bruce et al., 2015). In turn, sonic expectations influence people's behavior as well as how they utilize space. It has been found that it is not what is generally considered to be negative stimuli (such as loud sounds), but rather the presence of stimuli considered unexpected that affects people's behavior and space utilization (Bruce et al., 2015). Sonic expectations are state-neutral, though hearing unexpected sounds may influence people's place ratings in a positive (preference) or negative (annoyance) way (Bruce et al., 2015). In other words, sound expectation plays a significant role in people' sound preferences.

People's preferences of sound, needless to say, are different from each other. These differences in sound preference can be grouped along three levels (Yang, 2005a). The first level includes basic preferences. Here, people generally share common opinions in preferring certain sounds over the others. For instance, in public spaces, natural and cultural sounds are preferred over artificial sounds (Carles et al., 1992; Ismail, 2014; Kang & Zhang, 2002; Porteous & Mastin, 1985; Pouya, 2017; Yang, 2005a). Specifically, preference towards natural sounds such as sound of water (Carles et al., 1992; Kang &

Zhang, 2002; Pouya, 2017; Yang, 2005a), rain (Ismail, 2014), bird song (Carles et al., 1992; Kang & Zhang, 2002; Pouya, 2017; Yang, 2005a), and breeze (Pouya, 2017) has been established. At the same time, culturally relevant sounds such as church bells (Kang & Zhang, 2002; Yang, 2005a) music (Yang, 2005a), and clock chimes (Yang, 2005a) are also found to be preferred by people. On the other hand, some of the most disfavored sounds are man-made mechanical sounds such as those of construction (Kang & Zhang, 2002; Yang, 2005a), loud music (Yang, 2005a), sounds of vehicles (Yang, 2005a), traffic (Kang & Zhang, 2002; Leung et al., 2017; Pouya, 2017), and people's voices (Pouya, 2017).

However, people's sound preferences cannot be so facilely understood. They consist of numerous contradictions, contingencies, and subjectivities that often make preference decisions non-universal across various people and settings. This is the second level. For instance, the study by Pouya (2017) states that people's voices were among the disfavored sounds, a finding that was in contradiction to the study by Yang (2005a) which showed that human voices were neither preferred nor disfavored. A significant factor that appears to have contributed to this difference in preference is the contexts in which the two studies were carried out, an urban park in the former and an urban square in the latter. One could expect human voices to be minimal in an urban park. However, when heard in abundance it triggered an annoyance response, as opposed to human voices heard in urban squares which are widely occupied by people, hence expected. This reinforces the claim made previously by numerous researchers as to the effects sound expectations have on sound preference. Another contradictory finding was the response to music, which was found to be preferred in one instance and disfavored in others (Yang, 2005a). Yang (2005a)

found that while people preferred street music that came from human activities, people were displeased by music that was playing from parked cars or cars that were driving by. This perhaps is because the sound of music in the latter instance is accompanied with mechanical and high levels of low frequency sounds which people found to be displeasing (Yang, 2005a). The sources of sound thus play a role in determining if a sound is perceived as preferable or displeasing. At the same time, the study by Ismail (2014) found that natural and culturally appropriate sounds were preferred over mechanized artificial sounds. However, this finding was conditional: this preference persisted only for sounds with low intensities (low dB values) and for certain selected natural sounds with high intensities, such as rain and bird sounds (Ismail, 2014). This means that just like the contexts and sound sources, sound intensity too has a role to play in people's sound preferences. On top of all this, demographic factors also play a prominent role in preference patterns (Yang, 2005a). With the increase in age, people were found to prefer sounds relating to nature, culture, or human activities (Kang & Zhang, 2002; Yang, 2005a), while younger people were partial towards music and mechanical sounds (Kang & Zhang, 2002; Yang, 2005a). The only type of sound both age groups agreed on was human speech, which was rated as neither favorable nor disfavorable (Yang, 2005a). A possible reason for the difference in preferences is that as people grow older their sound preferences tend to be shaped by experience (Yang, 2005a). the older the people were, the more emotions they experienced when encountered speech sounds. Young people on the other hand, whose social lives are just beginning, may prefer high-arousal soundscapes when in public (Yang, 2005a). Although less significant than age, gender also has been found to play a role in sound preferences (Kang & Zhang, 2002; Yang, 2005a). Females were found to prefer church

bells, water, music played on the street, clock chimes, and sounds of children (Kang & Zhang, 2002; Yang, 2005a). No significant differences in preferences were found between people's occupations and where they lived in, i.e., whether they were locals or not (Kang & Zhang, 2002; Yang, 2005a). However, with an increase in the level of education a preference towards natural sounds and annoyance towards mechanical sounds has been reported (Kang & Zhang, 2002).

The third level of differences in sound preference are due to personal differences brought about by culture and experience (Yang, 2005a). This includes the effects of prior emotional experiences, cultural appropriation, and semantics. For instance, in the study by Ismail (2014), natural sounds related to negative semantic and emotional experiences (such as wind) were given negative scores by the participants.

3.2.4 Sound and People's Experiences

In a general sense, people are largely unaware of the importance of sound in affecting how they experience spaces (Rehan, 2016). This section discusses the influences sound has on people's experiences by looking at some of people's visceral reactions to sound, including annoyance and acceptance of sound; and physical reactions to sound, including their altered behavior when confronted with sound.

Annoyance responses are typically assumed to be triggered by a single dominant sound source, such as road traffic or aircraft sound. However, in reality, studies have found that annoyance may be triggered by more than one sound source (Leung et al., 2017). The study by Leung et al. (2017) discovered that the exposure to two or more sound sources may evoke a more extensive annoyance reaction in people than when they are exposed to sounds generated from a single source. Taking into account the combined effects on

annoyance by water, a wanted sound and road traffic, an unwanted sound, the study revealed the existence of combined sound regions, which are regions where the observed sound pressure levels (measured in dB) of two combined sound sources that are similar or within minute differences from each other. People's experiences in these regions were found to be different from those outside of them. In these regions, the probability of evoking a high annoyance reaction was found to be lower when the sounds heard were 'similar' to one another. This applies not only when wanted and unwanted sounds were involved but also when two unwanted sounds were involved. Also within these regions, the probability of experiencing annoyance is found to become higher when an additional unwanted sound is added. However, the study disclaimed that these synergetic effects did not apply to all combined sounds alike. Further, it has been found that it is important for people's sound expectations and the actual sounds of the soundscape to be congruent, which when incongruent have found to experience annoyance (Brambilla & Maffei, 2006). The study by Brambilla & Maffei (2006), which was carried out in an urban public park, revealed that the least expected sounds by a majority of the park users - aircraft sounds (21%) and road traffic (6%) – were rated to be the most annoying. The most frequently expected sound was bird song (96%) which was found to be the most acceptable sound type for users of the public park. In fact, a negative correlation was found between sound expectation and annoyance (Brambilla & Maffei, 2006; Rodrigues, 2018).

On the other hand, the acceptability of a sound stimulus increases with a decrease in both the overall level and the detectability of non-natural sounds (Brambilla & Maffei, 2006). The more natural are the sounds, the more likely they are to be accepted and the soundscape rated positive (Brambilla & Maffei, 2006; Rodrigues, 2018). Generally, a

soundscape is regarded as positive if it enhances how people feel about a place, however, the meaning of positive varies with the level of engagement people have with the soundscape (D'Alessandro et al., 2018). Thus, the constituents of a positive soundscape are natural sounds such as the sound of water, and human sounds, such as voices, footsteps, conversations, and laughter (D'Alessandro et al., 2018). Sounds of water especially have found to be associated with tranquility and relaxation, while human sounds suggest a sense of connection to the wider environment.

Environmental sounds modulate people's behavior. Over the past years, several researchers from around the world have studied the relationship between sound and people's behavior. A variety of sounds have been taken into account such as music (Aletta et al., 2016; Sayin et al., 2015), animal sounds (Sayin et al., 2015), footsteps (Maculewicz et al., 2016) and natural ambient sounds (Maculewicz et al., 2016), just as a variety of behaviors have been investigated: people stopping in public places (Francesco; Aletta et al., 2016), the duration people remain stopped for in places (Francesco; Aletta et al., 2016), avoidance of places (Sayin et al., 2015), willingness to purchase goods or spend money (Sayin et al., 2015), walking speeds (Maculewicz et al., 2016), and deliberately extending or cutting short travel time by taking longer or shorter routes (Bull, 2000). Music has appeared to be perhaps the most favored sound source to stimulate behavioral changes by researchers because of the ability researchers have to control its tempo and rhythm (Francesco; Aletta et al., 2016; Sayin et al., 2015). Music played in public spaces, regardless of what the public spaces were used for, revealed to have similar effects on people's behavior. However, the type of music was not found to significantly affect changes in behavior. This was confirmed by both Aletta et al. (2016) and Sayin et al.

(2015). Aletta et al. (2016) investigated the effects of classical and ambient music on people's behavior, that is, whether people stopped in public places upon hearing the music, only to find that they did not. However, a statistically significant relationship was found between the duration of those who did stop upon hearing the music, leading the team to conclude that the manipulation of the sound environment could provide strategies that are capable of promoting social cohesion in public spaces. At the same time, Sayin et al. (2015) perceived safety and behavior found an increase in the amount of money spent when perceived feelings of safety triggered by sound stimuli were high, when music could not be heard. In addition to the effects of music on behavior, Sayin et al. (2015) also found that hearing sounds of animals significantly correlated with money being spent in public spaces. The sounds of animals hinted of possible social presence. When social presence was higher and positive, which it was in this case, feelings of safety were higher, resulting in an increase in people's willingness to pay to purchase a monthly membership card to enter such space. In a different kind of study by Maculewicz et al. (2016), the relationship between pre-recorded footstep sounds and people's walking speeds was investigated. Participants were found to adapt their walking paces to the tempo of the footsteps heard on the recording. The walking speeds also correlated with the perceived naturalness of ambient sounds, where natural soundscapes led to reduced walking speeds. This led Maculewicz et al. (2016) to conclude that people walked slowly in slow and natural soundscapes and fast in fast and less natural soundscapes. Further, the study by Bull (2000) revealed that people often extended their travel time in order to 'get more music in' through headphones during their commutes, sometimes even going in circles around the block or taking longer routes in order to delay getting to their destinations.

CHAPTER 4

PRIVATE SOUND ENVIRONMENTS

Much like the previous chapter, this chapter also discusses sound, however, in the context of the private realm. In doing so, this chapter introduces a brand-new term, one that refers to the sonic environments that people create for themselves by means of headphones, which are private and individually experienced. The chapter concludes with an extensive review of research regarding the use of headphones in a variety of spaces.

4.1 Defining the Private Sound Environment

The culture of private listening represents both a continuum and a shift in western praxis (Bull, 2009). The continuum represents new developments in the search for public privacy and the discounting of the public, while the shift or transformation lies in the people's increasing ability and desire to make public spaces of the city conform to their desires (Bull, 2009). Private listening is made possible by headphones, which substitute the home and more recently the automobile as a creator of personal space (Bull, 2009). Headphones act as a demarcator of boundaries contributing to the formation of a kind of personal space, or zone of acoustic separation (Bull, 2000). According to the early work of Simmel (1997a), the need to establish zones of separation be historically traced to the discomfort the bourgeois faced as a result of being obligated to spend large amounts of time in close proximity to strangers in spaces. Referred to as "heterotopia" (Foucault, 1986), a "conversational preserve" (Goffman, 1971), a "cocoon" (Bull, 2000), an "invisible shell" (Bull, 2000), a "mobile home" (Bull, 2000), a "sanctuary" (Bull, 2000), a "personalized

sound world" (Bull, 2005), a "mobile hiding place" (Bloch, 1986), "mobile privatization" (Williams, 1989), "portable private-personal territory" (Hatuka & Toch, 2016), "personalized soundscape" (Weber, 2010), and "portable seclusion" (Papanek, 1971), these mediated private acoustic spaces are peripatetic, enabling the users to move from one place to another whilst still remaining in their own private world. These spaces are extremely fragile and for this reason headphone users often maintain a sense of equilibrium between public and private sound environments (Haas et al., 2018; Hatuka & Toch, 2016), which, according to Sennett (1990), represents the duality of modern culture. It is these sound environments, those that private listening creates, that the researcher coins as Private Sound Environments. Private Sound Environments enable the private listener to be separated from their immediate surrounding in order to be in a "mediated elsewhere" that is fulfilled by the use of headphones (Taylor, 1995). These Private Sound Environments, which have been constructed beyond outside surveillance, limit who the private listener wishes to interact with.

Despite the variety of terms referring to Private Sound Environments, none of them have been consistently applied in previous related studies. One of the main reasons is perhaps that each of these terms refers to Private Sound Environments in a colloquial and informal sense that do not warrant enough importance for the terms to endure. For this reason, among others, the reseracher sees great importance in establishing the term Private Sound Environment, especially for the purposes of this study. The closest term that was somewhat widely used was "personal soundscape," used inconsistently by Bull (2000), and then subsequently by Haas, Stemasov, and Rukzio (2018). The researcher disagrees with the use of the term "personal" to describe Private Sound Environments, even though

Private Sound Environments are a constituent of people's "personal" spaces. The researcher insists, as does Michael Bull (2000), that Private Sound Environments are not "personal" because what people listen to on headphones, i.e., the constituents of Private Sound Environments are industrial commodities that are not susceptible to "personalization."

Another reason behind the coining of a brand-new term (instead of resorting to those extant, especially Murray Schafer's much celebrated "soundscape") is based in both semantics and theory. First, Private Sound Environments cannot be regarded as "soundscapes" because the suffix "scape" semantically implies a sense of commonality – a simultaneous experiencing of the "scape" by multiple people. However, a Private Sound Environment, as the name states, is private and thus is singularly experienced. Second and perhaps most importantly, applying the term "soundscape" to refer to Private Sound Environments seems inconsistent with how Schafer originally intended the term to be used. Upon delving deep into Schafer's work and Kelman's (2010) critique of Schafer, it becomes clear that Schafer was no enthusiast of anything recorded, broadcast, or amplified, and sought to dismiss them when coining the term "soundscape". With regard to recorded or broadcast sound, instead of engaging in the ways in which technology complicates the relationship between social and sonic life, Schafer completely dismisses it. This is because he believes that "it is unnatural to be intimate at a distance" (Schafer, 1993, p. 89). This "distance" refers to separation between the source of sound and sound reception, in other words, the split of sound from the matter of sound. Schafer refers to this splitting of sound and the distances that broadcast and recorded sounds have brought about as "schizophonia." For Schafer, schizophonia leads undoubtedly toward meaninglessness and

dislocation, creating a "synthetic soundscape in which natural sounds are becoming increasingly unnatural while machine-made substitutes are providing the operative signals directing modern life" (Schafer, 1993, p. 91). Schafer objects to certain qualities of modern sounds and privileges sounds in their natural sockets over anything recorded, broadcast or amplified – values that persisted in his coining of the term "soundscape."

4.2 Use of Headphones

Arjun Appadurai (1986) claims that an object, any object, is not merely an artifact in a physical sense but often has a set of practices associated with it. This study, to understand headphones, builds on this essentialism-inspired claim. In that regard, headphones have been understood by the practices they bring to life beyond their mere physicality. These practices not only give social meanings to headphones, but also disclose the nature of the users (Appadurai, 1986).

Cities have great appeal because of their variety, eventfulness, possibility of choice, and intense atmosphere resulting in what Stanley Milgram (1970) calls urban overload. Urban overload occurs when people are unable to process inputs from the environment simply because there are far too many inputs to be processed (Milgram, 1970). Urban dwellers have increasingly inhabited environments that overload their senses. Many claim that this perhaps is the price they pay for the advantages of urban living in the 21st century (Porteous & Mastin, 1985). Typically, people's responses to urban overload are twofold: adaptation (Milgram, 1970) or retreat (Simmel, 1997a). The use of headphones, in that light, can be construed as a means of retreat as they mask the overwhelming nature of the city sounds. Headphones enable users to exercise control over their environments by

replacing the overwhelming sounds of cities with their own private sound environments that are controllable and more immediate (Bull, 2000).

However, retreat does not mean that headphone users withdraw completely from or turn indifferent to the urban environment. Rather, they use headphones as a "visual do not disturb sign" (Bull, 2000; Haas et al., 2018), to accomplish a goal similar to Simmel's (1997a) "blasé attitude" for the purpose of interfacing social relationships (de Souza e Silva & Firth, 2012). Bull (2000) pointed out that this inclination to interface social relationships stems from cultural and generational traits that leave people not wanting to interact with others. For instance, younger people have been found to use headphones in a more isolated manner as headphones give them the feeling of being occupied, immersed, and removed from their surroundings compared to older people (O Keeffe & Kerr, 2015). Adding to this, a 2014 survey by the music lifestyle brand Sol Republic revealed that 73% of Millennials admitted to wearing headphones to avoid interaction with people. Wirth (1938) and Simmel (1950) attribute this superficial and anonymous nature of social relationships to the transitory nature of (post)modernity. Regardless of where the roots of the blasé attitude lie, the multi-faceted otherness of the city gets progressively denied by the use of headphones (Urry, 2000). Headphones users' denial of the city, particularly the good or ill it does to the headphones user, is certainly a matter of contention: Bull (2009) claims that headphone users get more out of the city by not interacting with it, which is contrary to Mack Hagood (2011), who inquired "what good it was to live in a world if people just chose to ignore it?" (p. 7).

As headphone users pass through cities, sealed in their own private sound worlds, the urban environment gets unnoticed and derealized, resulting in the creation of non-

places. Augé (1995) claims that non-places are those spaces with no historical narrative attached to them thus alienating people as they passed through. These could be thought of as bland spaces that have been dropped at random on the urban fabric (Augé, 1995). However, Bull (2009) argues that where headphone users are concerned, any urban space can become a non-place. He argues that what makes a space a non-place is not the anthropological nature of the space but the subjective responses to that place (Bull, 2009).

As result of the high degree of urban overload that comes with contemporary urban living, city residents have been found to have low levels of awareness of environmental sounds (Porteous & Mastin, 1985). While any sound could act as a potential distractor, the use of headphones in particular have been found to be a primary culprit in denigrating peple's awareness of their environments. The oblivion of people takes place elusively and perhaps unconsciously, even when the people's attention appears to be directed to the environment and its sounds, (May & Walker, 2017) - a phenomenon Elliot and Urry (2010) refer to as being "technologically unconscious." Therefore, it is important that users - especially pedestrians, joggers, and cyclists - be aware that their perceptions and judgements may be impaired in obscure ways due to a degradation of perceptual and cognitive faculties by the use of headphones (May & Walker, 2017). It is for this reason that in 1982, the township of Woodbriedge in Jew Jersey banned the use of Walkmans among pedestrians, bicyclists, and drivers (Allen, 1982). Even though a person may be diligently attending to their environment and not their auditory entertainment, impairment to attention is still expected to occur and thus should never be used under the pretense that they are just as safe as unimpeded listening (May & Walker, 2017).

Using headphones is a way of dealing with the repetitive nature of everyday life - or the "realm of the ever same" as coined by Adorno (1976), or the "ever always the same" by Benjamin (1973) - as they add some degree of satisfaction by enabling the user to be in a desired mood or state of mind as they traverse through the city or even through daily their lives (Bull, 2000). In addition to mood maintenance, headphones also enhance and transform mood by acting as a tool of distraction that remove unwanted and intrusive thoughts. In other words, using headphones is a way of dealing with people's internal chaos, as headphones create a "mental space" for users to rest momentarily (Bull, 2000; Haas et al., 2018). Charles Stankievech (2007) refers to this space as the "impossible space inside the head" (p. 10), a space that does not exist in the physical realm but purely as a "psychedelic space inside the brain itself" (p. 10), and attributes its materialization to headphones and other media-modulated technologies. This is also what sound artist Berhard Leitner (2007) refers to as a "headscape." Henri Lefebvre (1991) refers to these spaces that the imagination seeks to change or appropriate and are often repurposed by each person's individuality, as "representational spaces". They are passively experienced; overlay physical space, making symbolic use of objects that cross path (Lefebvre, 1991); and challenge and reformulate established boundaries of cognitive and physical spaces, and public and private domains.

In addition to existing in the realm of "mental space", the mediated spaces created by headphones also exist in the realm of time, often transporting the user to somewhere else. This "somewhere else" is typically located outside cyclical and linear time, embodying a form of "compensatory metaphysics" (Adorno, 1991) – a person's rebellion against time through the consumption of products of the cultural industry. Bull (2000)

demonstrated a variety of ways in which time gets transformed though the use of headphones. Following Bachelard's (2000) and subsequently Lefebvre's (2004) notion of Rhythmanalysis, he demonstrated how cyclical time - which dominates the day, month, and season - and linear time, which influences the social organization of the day, get transformed and appropriated. Often, as a result of using of headphones, users are also left in denial of time's contingency. Benjamin (1969) refers to this phenomenon as "monumentalization" in his work.

Due to the congested nature of cities, people often face difficulty not knowing where to place their eyes when in public and especially, when in close proximity to strangers. At the same time, people feel uncomfortable by the awareness of their presence in the eyes of others (Bull, 2000). The use of headphones is one response to this lack of bodily and visual personal space (Bull, 2000) – a space that surrounds an idividual within which an entrance by someone else causes the individual to feel encroached upon (Goffman, 1959, p. 54). However, in the case of headphones, personal space ceases to exist in the physical realm - it becomes conceptual, and imbued in the world of sound (Bull, 2009). The encroachment of an individual's personal space is seen as a theft of their anonymity and space for thought (Bull, 2009). Headphones facilitate a "voyeuristic gaze" that empowers users to see but not be seen, much similar to wearing a pair of sunglasses (Bull, 2000). This was theorized as the "auditory gaze,", whose mundanity increased with the gradual shift to postmodernity (Friedberg, 1993). The asymmetry of the gaze has been historically discussed in the work of Benjamin (1969), who theorized the concept of "urban looking" under the notion of "flânerie." Flânerie, according to Benjamin, represents the aesthetic appropriation of experience in which subjects observe others but do not see

themselves as being a part of it (Benjamin, 1999). However, the notion of flânerie is inappropriate to explain contemporary headphone user for several reasons: first, flânerie is a 19th century vision-based concept that Benjamin himself declared to be obsolete in his 20th century work; and second, if flâneurs truly respond to phenomena on the street, then, headphone users cannot be regarded as flâneurs (Bull, 2000).

Headphones empower the ears and transform them from being the most democratic sense (Simmel, 1997b) to the most exclusive (Bull, 2009), the outcomes of which are privatization and isolation. Historically, isolation was synonymous with silence (Bauman, 2003; Bull, 2009): however, today, it refers to the search of technologically mediated sounds instead of direct experiences (Adorno, 1991). Headphones embody a dialectical relationship between isolation and connectivity: users are left isolated from their immediate surroundings, yet remain connected to a place beyond immediacy, creating new forms of "networked socialities" (Lee et al., 2012; Papacharissi, 2012), "networked individuals" (Castells, 2006), or "networked publics" (Boyd, 2007). This relationship between isolation and connectivity has been theorized through the notions of "warm" and "chilly" spaces by Bull (2009), where warm represents the proximate and the inclusive, and chilly, the distant and the exclusive. Bull (2009) claims that warmth and chill lie on a spectrum: as more people warm their private spaces, the chillier the urban environment becomes (Bull, 2009). Contrary to Bull's thoughts, Hatuka & Toch (2016) suggest that spaces should not be seen as a linear continuum but as a juxtaposition of spheres with different degrees of privacy and publicness. Though coined as warm and chilly spaces in 2009, the concepts have historical presence. Put forward in 1887, Ferdinand Tönnies' (1957) twofold social organization of "Gemeinschaft" and "Gesellschaft" bear similarity to these: Gemeinschaft

represents the warm and intimate pre-industrial modes of community and the Gesellschaft represents the cold, distancing relations of urban culture, where utilitarianism and instrumentalism reign (Bull, 2009).

In the recent past, headphones have been regarded as the "newest fashion accessory that isn't a fashion accessory at all" (SOL Republic, 2014). It is a symbol of status and, sometimes, wealth (Haas et al., 2018). People often use headphones to enjoy better sound quality (Haas et al., 2018), with the exception of children, who place less importance on audio quality and more importance on social commitment, i.e., sharing headphones with friends and family (Bickford et al., 2014). Headphones are also used when people do not want to disturb others around them, and for the purpose of increased concentration (Haas et al., 2018). For these reasons, Haas et al. (2018) found that people sometime wore headphones even without listening to anything on them. Interestingly, the study by Haas et al. (2018) also investigated how the usage of different headphone types differed from various environments (Figure 4.1). The environments that were taken into account were: being at home alone, being at home with others, being at work, while walking, travelling on public transportation, participating in sports, being on individual transportation, and being at events (which are places like stadiums and concert halls). The types of headphones that were investigated were earbuds, in ear, over ear, active noise cancelling, ear plugs, and hearables. The findings revealed that music was the most common form of audio that was listened to, followed by silence. Sounds of nature was what was least listened to. The most commonly used type of headphones, according to this study, was the in-ear headphones,

which the authors attribute to the fact that it is the kind of headphones that come free of charge with mobile phones, which almost everyone owns today.

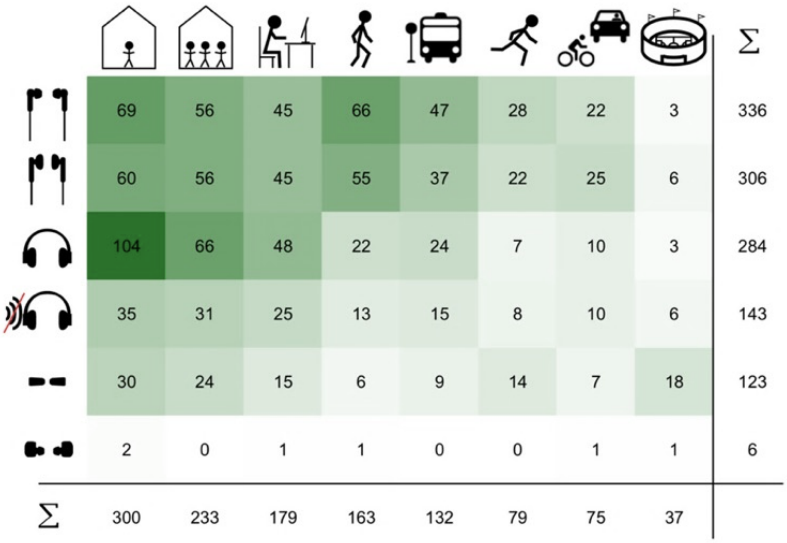

Figure 4.1 The reported usage of different audio technology in selected environments.
Source: Haas et al. (2018)

4.3 Beyond Conventional Headphones

The world of headphones is moving forward at a rapid pace with its latest inventions. While some of these inventions are no doubt technologically progressive, others inventions are completely revamping the appearance of headphones as we have always known them, from something that is wedged into or placed on the ear, to something that is more discreet, concealed, and disguised as something else. Some examples of this trend are the newest wearables in the field including the Bose Frames and the Bluetooth beanie. These products are not progressive in terms of sound quality, and the rationale behind this compromise of sound quality in place for disguise and concealment of the hearing devices remains unclear.

The Bose Frames (Figure 4.2), introduced in 2019 and marketed as “sunglasses with a soundtrack” (Bose Corporation, 2019a), are nothing but a pair of sunglasses with

speakers attached to the arms to provide the user with a “secret, state-of-the-art, personal listening experience” (Bose Corporation, 2019a). Priced at $199.95 as of January 2020, Bose assures that the listening experience would truly be kept private with zero sound bleed so that “others could hear practically nothing” (Bose Corporation, 2019a).

Figure 4.2 The Bose Frames.
Source: www.bose.com, accessed December January 8, 2020.

The Bluetooth beanie (Figure 4.3), very simply, is a beanie with a pair of speakers attached to the inner seams of it, provides the wearer with a private listening experience. Unlike the Bose Frames, these are not sold under a particular name brand and thus are manufactured and sold by a number of sellers at prices starting from $10 as of January 2020. The concealment of the speakers makes the beanie look mundane and unsuspecting, while allowing the users to be immersed in a private sound environment.

Figure 4.3 The Bluetooth beanie.
Source: www.nerdtechy.com, accessed December January 8, 2020.

These devices are new so not widely used yet given their novelty and perhaps the retail price. The question that the researcher has been left pondering is whether people are willing to spend on devices with mediocre sound quality just to conceal from the rest of the world the fact that they are listening to something. And if they do, why.

CHAPTER 5

RESEARCH METHOD

This study was designed to answer the research questions listed in Table 5.1.

An important semantic clarification needs to be made between the terms *use*, *play* and *wear*. Throughout this study, the term *use*, as in the *use* of headphones, refers to the two instances when headphones are used: first, for the purpose of *playing* a recording of some sort; and second, for the purpose of only *wearing* them, without playing any recording.

Table 5.1 Research Questions and Sources of Data

No.	Questions	Sources of data
1.	Why do people use headphones in public parks and on public transit?	Focus groups, in-depth interviews, online surveys, and on-site surveys
2.	When do people begin to use headphones and when do they discontinue using headphones in parks and on public transit?	Focus groups, in-depth interviews, online surveys, and on-site surveys
3.	What activities do people engage in when using headphones in parks and on public transit?	Focus groups, in-depth interviews, online surveys, and on-site surveys
4.	What do people listen to (or not) on headphones in parks and on public transit?	Focus groups, in-depth interviews, online surveys, and on-site surveys
5.	How does using headphones affect people's experiences in parks and on public transit?	Focus groups, in-depth interviews, online surveys, and on-site surveys

5.1 Study Sites

Two types of public spaces were chosen as sites for this research. That decision was inspired by the classifications of public spaces developed by Walzer (1986) and Bull

(2000). Parks were selected as they typically have more than a single use making them "open-minded" spaces (Walzer, 1986). At the same time, they are places that people deliberately make a choice to occupy, making them "freely chosen" spaces (Bull, 2000). The opposite kind of space as per Walzer and Bull are ones that facilitate a single use, being therefore "single-minded" spaces (Walzer, 1986). These are spaces that people do not go to by choice but rather by necessity, in other words, "routine" spaces (Bull, 2000). Transit spaces are an example of this and therefore were chosen for this study.

Parks and trains are different from each other in other aspects as well: parks are stationary, trains move; parks have open access and are highly permeable, trains are "captive" and impermeable; parks are destinations, trains are transient spaces; parks are spaces of leisure and recreation, trains are not; parks bring people close to nature, trains do not; parks are large in extent therefore people often are not in close proximity to strangers; the space in trains is smaller, therefore people encounter strangers within close proximity to themselves. These differences between parks and trains are likely to influence people's decisions to use headphones or not in these two types of spaces.

Walzer's (1986) and Bull's (2000) work helped identify the *types* of spaces to study. A secondary set of criteria developed by the author served in selecting particular parks and transit spaces.

5.1.1 Parks

Several criteria were used in selecting the parks to study. It was important that they promote a wide variety of activities; that they are heavily used; that they are used for leisure and recreation, at least by some people if not by all; and, finally, that they were easily accessible to the researcher. On these grounds, several New York City parks were eliminated: Bryant

Park was eliminated as early field visits indicated that it does not host a diversity of activities. City Hall Park was eliminated as well since it is used primaritly at lunch time and not over the course of the day. Columbus Park and Union Square Park were not good candidates given their limited amount of space and Prospect Park, located in Brooklyn, was not easitly accessible to the researcher.

Eventually, the two parks chosen were Washington Square Park, located in Lower Manhattan (Figure 5.1) and Central Park's East Meadow, located by 5th Avenue between 69th and 72nd Streets. Central Park's East Meadow is a park in a conventional sense where people are secluded from the city and close to nature. Little of the city that surrounds it can be seen or heard here, and it feels as if one has escaped the hustle and bustle of the city. This is in stark opposition to Washington Square Park, which is a combination of a park and an urban square. While a certain degree of 'nature' still exists here, traces of the city both visually and sonically, are clearly present.

Figure 5.1 Washington Square Park in Lower Manhattan, New York.
Source: photo by author (2019).

The purpose of choosing study sites was to collect data in these sites about people's use headphones in them. Visits to Washington Square Park demonstrated that it was a good site for the research because it is frequented by people using headphones throughout the day. The East Meadow in Central Park however, is almost entirely devoid of people using headphones on weekdays (Figure 5.2), and during the weekends, based on initial observations. It is frequented, instead, by people who gather in groups with friends or family too picnic (Figure 5.2). In three visits to the Meadow, not a single person was observed to be using headphones. The very factors that led the researcher to choose the East Meadow as a possible study site - secluded, close to nature, and enabling escapism - made it an unsuitable case for this study. In addition, several inherent qualities of the Meadow also likely discourage the use of headphones. For instance, its large extent enables people to be spread wide apart from each other. This meant that there is little chance of one group of people overhearing others, eliminating the need for people to use headphones to cancel out surrounding sound. It also meant that there was little to no need to listen to audio through headphones, as people could play their audio out loud without anyone overhearing or being disturbed, provided it was not amplified by external speakers or other such means. In addition, the chance of people being approached by strangers, say, for directions, promotions, and other such matters was minimal because the space was not conducive for activities other than picnicking or relaxing. As a result of this absence of headphone use, the East Meadow was eliminated as a study site.

Figure 5.2 Central Park's East Meadow on a Thursday at noon, and on a Sunday afternoon. *Source: photo by author (2020).*

The East Meadow was replaced by Tompkins Square Park (Figure 5.3) as a possible park to study. Located in the East Village in New York City, it is similar in design and character to Washington Square Park. Though by physical traits, Tompkins Square Park and Washington Square Park are similar, in terms of demographics, they are not. A majority of those observed in Tompkins Square Park are of older age, approximately over 65 years, had mobility issues and were seen strolling through the park with the help of aids like wheelchairs or walking sticks, or were homeless. Only a few people using headphones were observed. In addition, the park is not heavily occupied, which resulted in a low response rate when conducting the on-site surveys. Because Tompkins Square Park was not much of a success in terms of collecting data, Madison Square Park, located in the Flatiron District in New York City (Figure 5.4) was added as a study site (Tompkins Square Park was retained as a study site).

Figure 5.3 Tompkins Square Park in the East Village, New York.
Source: photo by author (2020).

In terms of physical characteristics, Madison Square Park is similar to both Washington and Tompkins Square Parks but in terms of occupants, is in stark opposition to Tompkins Square Park. The majority of the occupants were younger (easily under 50). The park was constantly crowded with an array of programmed activities going on including meditation classes, yoga workshops, and toddler book reading sessions in the common areas, while people maintain proper social distancing. In addition, the greatest number of people that were using headphones was observed in Madison Square Park out of the three parks.

Figure 5.4 Madison Square Park in the Flatiron District, New York.
Source: photo by author (2020).

5.1.2 Transit

As in the selection of parks, several criteria were established to choose which type of transit space to study. It was important that the selected transit be 'local.' This was because, based on observations, and as was confirmed by Sherman (2015), long distance or non-local trains are characteristically different sort of a public space compared to local trains. For this reason, long-distance, regional, and commuter trains operating in the area such as Acela, Amtrak, Northeast Corridor, Northeast Regional, and the North Jersey Coast Line were eliminated. Second, there had to be enough time from one stop to the next to give the researcher enough time to populate the surveys conducted on-site. For this reason, the New York City subway was eliminated. Third, the transit had be easily accessible and cost effective for the researcher. For these reasons, the public transit chosen was the Port

Authority Trans-Hudson rapid transit system, colloquially known as the PATH train (Figure 5.5).

Figure 5.5 The Port Authority Trans-Hudson (PATH) train.
Source: photo by author (2019).

5.2 Data Collection

This study relied on primary data gathered by means of focus group discussions, in-depth interviews, and surveys administered both online and on-site. Participants' gender and whether they occupied public spaces by themselves or were accompanied by others were identified as confounders. These confounders were controlled for by ensuring equal representation of men and women across all data sources, and by recruiting only those that occupied public spaces alone. Data collection took place in two phases: Phase One, where open-ended questions were posed that elicit lengthy and detailed responses; and Phase Two, where closed-ended questions and questions that were intended to elicit shorter responses were inquired.

5.2.1 Phase One

Phase One was meant to provide the researcher with an initial understanding of the use of headphones in parks and transit spaces. The often lengthy and elaborate responses that were collected during this phase allowed the researcher to determine the wording for subsequent, more precise questions to pose to respondents, some being fixed choice, and some, open-ended.

To date, there exists minimal research about the use of headphones in public spaces. Therefore, the researcher needed to begin with an exploratory phase to discover people's intentions and experiences with headphone use in public spaces in order to develop more precise wording for questions to pose to respondents in subsequent interviews and surveys. During this phase, data were collected through a series of focus group interviews conducted in person and in-depth interviews with individual respondents conducted online. The focus groups took place first followed by the interviews. Phase One took place from February to May 2020.

5.2.1.1 Focus groups. Recruitment for focus groups began in mid-February 2020, two days after obtaining IRB approval. There were four criteria for participation in focus groups. First, participants had to be 18 years of age or older. Second, participants had to be NJIT students. Third, participants had to have used headphones in a public park and on a train during the two weeks prior to the focus groups, to avoid recall bias. Recall bias is the bias in respondents' abilities to 'recall' their experiences if data collection takes place too far apart from the time the sites were experienced. Fourth, participants had to have been by alone in these parks and on trains while using headphones (this was to control for confounders related to whether participants were alone or with other people). To control

for gender-related confounders, an attempt was made to populate each focus group with an equal or near-equal number of men and women (no non-binary persons volunteered to participate in the focus groups).

Initially, recruitment was done by displaying flyers (Appendix A) in public places in the NJIT campus such as the Van Houten Library, the Campus Center, and the bookstore, as well as in public places near the NJIT campus such as at the NJIT/Rutgers shuttle stop on Warren Street and at the Warren Street Light Rail station. In addition, recruitment was done by circulating emails using NJIT's student database, and by word of mouth with the help of participants and the researcher's friends and colleagues.

The number of participants resulting from these recruitment methods was insufficient. Therefore, after conducting one focus group, further efforts were made to recruit more participants. In an effort to do so, tags were posted on the flyers that were already on display that read "Still Recruiting! Participate and receive a pair of earphones!." In addition, handouts (Appendix B) were handed out in the Campus Center to students who appeared to be using headphones and more emails were sent out using the student database with mention of the aforementioned new incentive for participation. Participant turnout improved subsequent to introducing the incentive. With a total of 13 participants including five women and eight men between the ages of 18 to 58 years ($M = 26$ years, $SD = 10$), four focus groups were conducted (see Table 5.2).

Each focus group consisted of three to four participants and lasted for about 45 to 60 minutes. At the beginning of each focus group, respondents were briefed about the process, their rights were made clear, and were requested to sign the consent form as per IRB requirements. The focus group questions posed by the researcher are listed in

Appendix C. All focus groups were audio-recorded. Respondents were provided with a choice of snacks and drinks, and at the end of the focus group, their incentive, the pair of headphones, was handed out along with a handout requesting them to pass the word around, where for every successful referral, a referral bonus of a $3 Amazon gift card would be provided. The focus groups were conducted over the course of one month. With the campus-wide lockdown imposed early-March 2020, the focus groups could no longer be conducted, and hence were ceased. However, as sufficient data had been obtained at this point in order to move forward, no adverse impacts were brought about to the study.

Upon completion of the focus groups, during the month that followed, i.e., March 2020, the audio recorded discussions were manually transcribed. A free and open-source audio editing software, Audacity, was used to reduce the speed of the recordings to a transcribe-able pace. After transcribing, the transcriptions were studied in detail in order to formulate the questions to raise in the in-depth interviews that were to follow. Then, the interview protocols were developed and other necessary documents were prepared for the next round of IRB approval.

5.2.1.2 In-depth interviews. Upon obtaining IRB approval, recruitment began for the in-depth interviews in mid-April 2020. Three recruitment criteria had to be met for inclusion in these interviews. Participants had to be 18 years or older; they must have used headphones in a public park or on a train; and they must have been alone in these parks or trains while using headphones. Unlike in the focus groups, interviews were conducted with members of the general public and not just with students, although several participants were in fact, students. Recruitment was done entirely by virtual means as the lockdown still persisted at this point by: circulating emails using both NJIT and Rutgers mail servers;

posting on social media, particularly in groups where headphone enthusiasts and audiophiles congregated; and by word of mouth. To compensate for their time, each participant was provided with an Amazon gift card of $5 upon successfully completing an interview. A total of 58 participants including 28 women and 30 men between the ages of 22 to 53 years (M = 31 years, SD = 7) were interviewed (see Table 5.2).

Each interview lasted 30 to 45 minutes and were conducted either through a phone call, a Skype call, or a Zoom call according to the participant's preference. At the beginning on each interview, the respondents were briefed, their rights read, and verbal consent sought as per IRB requirements. The questions that were posed are available in Appendix D. All interviews were audio-recorded. Upon successful completion of each interview, a gift card as emailed to each participant. The 58 interviews were conducted over a period of a month and half, which came to an end by the end of May 2020 upon reaching a satisfactory number of responses.

During the two months that followed, i.e., June and July 2020, the interviews were manually transcribed. A free and open-source audio editing software, Audacity, was used to reduce the speed of the recordings to a transcribe-able pace for the interviews conducted through phone calls and Skype. For the interviews conducted through Zoom, the automatic transcription feature was used by borrowing a colleague's institutional Zoom account (this transcription feature is not available in the free version). After transcribing, the transcriptions were studied in detail in order to formulate the questions to use in the subsequent on-site and online surveys. Then, the survey protocols and other necessary documents were prepared for the next round of IRB review.

Table 5.2 Details of Phase One Respondents

Details	Focus Groups	In-Depth Interviews
Total number of respondents	13	58
Number of women	5	28
Number of men	8	30
Mean age	26 years	31 years

5.2.2 Phase Two

In Phase Two, data were collected with two surveys, one conducted online and one on-site. Questions for the surveys were developed based on findings from Phase One. The on-site surveys were included in the study out of concern for ecological validity. Ecological validity is concerned with the generalizability of findings particularly when the study takes place in an ecologically different context. Due to the closed-ended nature of the questions that were posed, this phase accumulated largely straightforward, brief answers. The on-site survey was concise enough to require only a small portion of the respondent's time. This brevity was important because of the motivational and recruitment complexities involved, particularly as no remuneration was made to the respondents for their time and effort, and as people occupy public spaces, especially trains, with a sense of urgency. Phase Two took place during July to September 2020.

5.2.2.1 Online surveys. The online surveys began in mid-July 2020 subsequent to obtaining the third and final round of IRB approval. Recruitment was done on the basis of convenience, including only those who meet the criteria for inclusion: respondents had to have used headphones in parks and on trains, respondents had to have visited these spaces by themselves without being accompanied by friends or family, respondents had to be 18 years or older, and respondents had to live in North America. The survey was administered

via Google Forms. Recruitment took place online, by circulating the survey URL (Appendix E) through emails using NJIT and Rutgers mail servers; posting on social media, particularly in groups where headphone enthusiasts and audiophiles congregated; and by word of mouth. A total of 148 people responded to the survey. Upon cleaning up the data and eliminating incomplete responses, 134 responses were of appropriate quality. This included 67 women, 61 men, 5 non-binary, and one respondent who did not disclose their gender (M = 27 years, SD = 5).

On average, one survey took around six to eight minutes to complete. At the beginning of the survey, the respondent's rights and expectations were made clear and consent was sought. The questionnaire has been attached to Appendix E. The surveys were conducted over the course of two months, beginning in mid-July 2020 and ending in mid-September 2020 after reaching a satisfactory number of responses.

5.2.2.2 On-site surveys. The on-site surveys also began in mid-July 2020, a week after the online survey started to take place. The survey was conducted at the four study sites: Washington Square, Tompkins Square, and Madison Square parks and on the PATH train. In parks, the researcher strolled through the parks in search of people who were observed to be using headphones. Upon finding a headphone user, the researcher then introduced herself, the purpose of the survey, and inquired if they were willing to take the survey. After receiving verbal consent, the questionnaire (Appendix F) was made available either in paper form or by digital means (by providing the respondents with a QR code that they could scan from their mobile phones, which would take them to the online version of the survey), depending on their preference. This choice of medium was offered as the researcher anticipated that people may not want to touch items like survey forms that did

not belong to them in the height of a global pandemic. For those who chose paper forms, single use golf pencils were provided to fill the survey, which the participants then got to keep. Proper social distancing rules were followed, and the researcher wore a face mask and gloves at all times. The surveys were administered in the mornings (until noon) and afternoons (noon to 5pm) during weekdays and weekends. A total of 68 people responded to the survey across all three parks, which included 42 women, 25 men, and 1 non-binary respondent (M = 30 years, SD = 10) (see Table 5.3).

When conducting the on-site surveys on public transit, the online version of the form (Appendix G) was used. In addition to having a low response-rate of approximately 10%, many of the handful of those who agreed to take the survey did not complete the survey. Further, other factors like poor network connectivity and respondents not remaining long enough on the train to complete the survey contributed to the low response rate.

To complete the required number of responses for the surveys, the researcher then altered her method, moving from surveying those who were on the PATH train to those who were on the platform waiting to board the PATH train. This strategy appeared to generate a higher response rate than before, approximately 40%, but was insufficient to gather a sufficient amount of data. As a result, the researcher sought off-site means, such as using mailing lists and social media, to encourage those who use the PATH train to take the survey. This may have slightly altered the quality of the data, as the data was no longer collected on-site, which is a shortcoming of this study. A total of 49 people responded to the surveys, which included 28 women and 21 men (M = 26 years, SD = 7) (see Table 5.3).

On average, each survey took around three minutes to complete. The surveys were conducted over the course of two and half months, beginning mid-July 2020 and continuing until the end of September in 2020.

Table 5.3 Details of Phase Two Respondents

	Online Surveys	**On-Site Surveys**				
		Parks	Washington Square Park	Tompkins Square Park	Madison Square Park	**PATH Train**
Total respondents	134	68	32	19	17	49
Women	67	42				28
Men	61	25				21
Non-binary	5	1				-
Gender undisclosed	1	-				-
Mean age	27 years	30 years				26 years

5.3 Data Analysis

Analysis of data began soon after data were collected from each of the sources, i.e., focus groups, in-depth interviews, online surveys, and on-site surveys. The elaborate and descriptive responses from focus groups and interviews and the few open-ended questions in the two surveys were subjected to a series of content analyses. Some of these open-ended responses and a majority of the responses from the shorter, closed-ended questions from the two surveys (online and on-site) were used to calculate percentages based on the frequencies with which answers were reported. Tables, charts, and graphs were produced based on the outcomes of these analyses, particularly, the numeric outcomes, to better visualize the findings. When a particular question that was being investigated was supplemented by more than one data source, the data source with the best quality of responses was used for purposes of analysis.

CHAPTER 6

USE OF HEADPHONES IN URBAN PUBLIC PLACES

"What I'm often surprised by are the things that I didn't predict. For instance, when I lived in New York in the early 1980s, I remember seeing this composer, Rhys Chatham, walking down the street with a Walkman. It was the first time I'd ever seen a Walkman. And I thought, "That's a stupid idea. That's never going to last." [Laughs.] "Why would you want to walk down the street and not listen to the street?" I completely failed to grasp that one"

Brian Eno, *The New York Times*

6.1 Reasons for Using Headphones

This dissertation research was able to identify 13 reasons why people use headphones in public places from focus group and interview responses (see Table 6.1). While an understanding of the reasons why people use headphones is useful, what is also important is to understand these reasons in conjunction with the public places that they take place in. This is because the reasons why people use headphones is significant different from one type of public place to another (also shown in Table 6.1).

The main reason people use headphones is to *play audio,* whether they are actively listening, that is, paying attention to the audio or passively hearing it in the background. This includes playing various genres of music, videos, movies, podcasts, audiobooks, documentaries, educational content, and even answering or making phone calls. People often play audio on their headphones when they determine that the public sound environment is not worthy of being heard or listened to. In such circumstances, people use headphones to play audio of their choice. In line with this, another respondent stated the following: "I always have headphones on, the music there [the store] is garbage." People also play audio on headphones for pleasure, for purposes of keeping themselves

entertained, and to keep themselves company so that they do not feel alone. As depicted in Table 6.1, transit spaces are where respondents most frequently reported to use headphones for purposes of playing audio. Commercial spaces and streets follow in frequency as additional places where headphones re most frequently used to play audio.

Table 6.1 Reasons for Using Headphones in Urban Public Places

Types of Reasons	Types of Public Places								
	Parks	**Transit**	**Streets**	**Commercial**	**Educational**	**Entertainment**	**Outdoor**	**Unspecified**	Total responses
	Frequency of responses and percentages in each category and each place								
To play audio	1 (4%)	7 (30%)	3 (13%)	4 (17%)	-	-	2 (9%)	6 (26%)	23 (100%)
To reduce / cancel noise	1 (6%)	5 (28%)	1 (6%)	3 (17%)	-	2 (11%)	1 (6%)	5 (28%)	18 (100%)
To concentrate	1 (8%)	2 (17%)	-	1 (8%)	-	1 (8%)	1 (8%)	6 (50%)	12 (100%)
To relax	5 (63%)	1 (13%)	-	1 (13%)	-	-	-	1 (13%)	8 (100%)
For social isolation	1 (17%)	2 (33%)	-	1 (17%)	-	-	-	2 (33%)	6 (100%)
For temporal reasons	-	1 (25%)	1 (25%)	-	-	-	-	2 (50%)	4 (100%)
For therapeutic purposes	-	-	-	1 (33%)	-	-	-	2 (67%)	3 (100%)
For convenience	-	1 (33%)	-	1 (33%)	-	-	-	1 (33%)	3 (100%)
To keep busy and engaged	1 (50%)	1 (50%)	-	-	-	-	-	-	2 (100%)
Routine or habit	-	1 (50%)	-	1 (50%)	-	-	-	-	2 (100%)
For better listening experience	-	1 (100%)	-	-	-	-	-	-	1 (100%)
To avoid nuisance	-	-	-	-	1 (100%)	-	-	-	1 (100%)
To reminisce	-	-	-	-	-	-	-	1 (100%)	1 (100%)

Note: Frequency of responses to the question “Why do you use headphones in public places?” from 32 in-depth interviews.

Using headphones is one proactive way of avoiding unpleasant acoustic experiences in public space, including other playing their music out loud, or talking loudly with each other or on the phone. In such instances, headphones help people remain unbothered in public places amidst the chaos and unpleasantness that unfold around them by *reducing or cancelling noise*. "I don't want to be bothered. So, I use headphones to drown out any other noises […]" said one respondent. Another respondent stated that they: "use headphones to remove any ambient sounds. Let's say in a coffee shop, if there's too much chatter or a lot of people, I listen to some light music in the background on my headphones. It helps me to tune out the ambient sounds and helps me concentrate better." Transit spaces are where respondents reported to use headphones most frequently for purposes of noise reduction or cancellation, at a frequency of 28% of a total of 18 interview responses (n = 18). This was closely followed in frequency by commercial spaces (17%, n = 18) and spaces of entertainment (11%, n = 18), as shown in Table 6.1.

People use headphones for purposes of *concentration,* which includes improving their ability to concentrate, focus, or think about a particular task at hand. The irony of this is that headphones do so by distracting people from everything that is going on around them. This concentration-distraction paradox, as the researcher coins, that headphone use creates enables people to concentrate towards tasks at hand, but it does so by taking away people's concentration on their immediate environments. Headphones enable people to "be immersed in what they are engaged in" and focus their attention, by being "less disturbed by the happenings of the environment and the people around them," according to the focus group and interview responses. This oblivion of headphone users towards other people around them is said to put these other people at ease – "sometimes people feel like it's

easier if you're not paying too much attention to them" one respondent said. Findings report that people use headphones for purposes of concentration most frequently in spaces of transit. This is at a frequency of 17%, based on 12 interview responses (see Table 6.1).

Headphone use also promotes peace, tranquility and *relaxation*. Headphones aid people to be at rest, be relaxed, and sometimes even aid in falling asleep. For instance, "in a flight, headphones help you sleep because the headphones cancel background noises, so it helps you sleep. Or it helps you watch a movie or listen to a song. Basically, it helps relax yourself" said one respondent. Headphone use also help people enjoy their surroundings better – "if I'm looking at nature or something I like listening to some kind of background music which helps append my experience of that place." People use headphones for purposes of relaxation most frequently in public parks. This is followed in frequency by transit spaces and commercial spaces (see Table 6.1).

Headphones create "a bubble" enabling people to be *socially isolated* and immersed in their own personal space. This personal space, or the PSE allows respondents to "keep to themselves", "be introverted", and be socially isolated and unavailable according to respondents. Also, "[…] headphones often serve as a shield for people to not approach me," one respondent stated. Though people are cut off from social relationships as a result of using headphones, these people do not feel alone because more often than not, there is some form of audio playing on their headphones which makes them "feel connected to other people, places, and circumstances" that are beyond immediacy. The interview responses revealed that respondents use headphones to be socially isolated most frequently in spaces of public transit, public parks, and commercial spaces (see Table 6.1).

The *temporal reasons* why people use headphones, as the name states, has to do with matters involving time. Respondents have reported that using headphones allows them "to kill time" and "make time go by faster." Because of this sense of quick passage of time that the use of headphones brings about, people also use headphones to "help reach the destination quicker", be "distracted from the distance there is to walk" and be "distracted from wondering how long it would take to arrive at the destination." The type of public places in which headphones are most frequently used out of such temporal concerns are spaces of transit followed by streets (see Table 6.1).

"I have what's called Musical Ear Syndrome. It's an auditory hallucination. It's completely benign […]. But ever since I was a kid I've had like a radio station playing in my head. […] sometimes it's extremely intrusive and distracting. Listening to music on headphones in particular, because of the isolation factor helps with that. So, I use headphones partly for pleasure and partly for therapy." This respondent's statement indicates another reason why people use headphones – for *therapeutic purposes*. Headphone use also helps people who find public places to be overwhelming to be in a "healthier headspace." One respondent stated the following in this light: "I use headphone to drown out a lot of background noise because I do get a little bit overwhelmed in public spaces. I'm a military veteran and I have PTSD and Hyper Vigilance, so when there are large crowds or in crowded spaces where there is not too much noise going on, I will try to drown that out using headphones and that way I can remain observant with my eyes of what's going on around me." The respondent went on to state the following: "it also helps a lot with mood because with PTSD comes depression and sometimes I'm in a bad mood and I have to go run errands, but I won't want to leave the house. So, I put music on and

that kind of helps me get into a healthier headspace." Headphones were reported to be used for therapeutic purposes primarily in commercial spaces (see Table 6.1).

Convenience plays an important role in people's decision to use headphones. Using headphones eliminates the need for people to constantly be holding the device to which the headphones are attached. It allows people to roam around freely with their hands free giving them the opportunity to multitask. For instance, one respondent stated that "if I get any calls while I'm grocery shopping or going to work, it's easier to use headphones to talk rather than holding your phone, because while at grocery shopping, you will be pushing your cart and picking up stuff from shelves. So, you need your hands to be free. Even on public transit, you need to make sure because of rush hour traffic, that your hands are free to support yourself." Also, "headphones are convenient because I can operate with hands-free" said another respondent. Using headphones of out matters pertaining to convenience was most commonly reported in transit spaces and commercial spaces (see Table 6.1).

Being immersed in PSEs keep people *busy and engaged*. The provide something for people to do, or rather listen to, in instances that people feel like "there is nothing to do", or in circumstances that are "boring", monotonous, or "tedious." A respondent elaborated on this: "I can't do a lot of tedious things. But if I was listening to something on my headphones to entertain my brain, I wouldn't mind doing it. So, running is kind of boring. But if I listen to a podcast that I find it interesting, then my mind is distracted from the boringness of running." As depicted in Table 6.1, public parks and spaces of public transit are the most frequently reported places where respondents use headphones to be busy or engaged.

"I use headphones out of habit, not because of a specific reason." *Routine or habit* is another reason why people use headphones. Only a handful of responses indicate so (n = 2) and was most frequently reported to take places in transit spaces and commercial spaces (see Table 6.1).

Use of headphones provide a *better listening experience*, which many respondents have referred to as "intimate" compared to other forms of listening to audio, such as blaring audio on speakers for instance. One respondent stated that "things are better done with headphones because I can hear better with them and they also block outside noise." Only one respondent admitted to using headphones because they provide a better listening experience, and they claimed to do so only in transit spaces.

Some people use headphones out of concern and respect for others around them. *Avoiding causing nuisance* or disturbances to others is the main objective for these people to use headphones. For instance, one respondent mentioned, "[…] I wear headphones when I'm on FaceTime or on a phone call with friends and maybe it's late and I don't want to bother people with my loudness." While these people seek to avoid causing disturbance to others, they also have other personal motives behind the use of headphones which is to retain the privacy of what they are listening to.

Headphone use help people *reminisce* and relive past feelings, memories, and experiences. One respondent elaborated on this as follows: "another reason I use headphones is, I recently discovered that while doing certain experiences, if I listen to certain soundtracks, and if listen to those soundtracks somewhere down the line, it helps me revisit those memories or trigger those old feelings. That's helpful. And when I have certain playlists already set up for a certain amount of time, it helps me look back. For

instance, it helps me recall what I was listening to or what I was doing 6 months ago." Table 6.1 above indicates the public places in which people use headphones for purposes of reminiscing.

6.2 Times When People Use and Do Not Use Headphones

To aid an understanding of *when* people use headphones, findings from this study reveal five factors that prompt the use of headphones. These factors, which were identified based in responses from four focus groups, influence people's use of headphones.

The first factor influencing the use of headphones are the different public *places* in the urban environment. Seven different types of public places in urban environments where people use headphones were identified (see Table 6.2). The most frequently reported spaces are spaces in modes of public transit, including trains, subways, busses, and airplanes, and other auxiliary spaces such as train stations and airports. This was followed, in frequency, by public parks and streets. The following places were also reported at relatively lower frequencies: miscellaneous spaces just out and about in the city; educational spaces like various spaces on campus including buildings, libraries, and classrooms; commercial spaces like grocery stores, supermarkets, shopping malls; and spaces of entertainment like museums, and concert halls.

Table 6.2 Urban Public Places Where People Use Headphones

Type of Urban Public Place	Frequency of Responses and Percentages
Public transit	37 (38%)
Public parks	22 (22%)
Streets	17 (17%)
Miscellaneous public spaces	8 (8%)
Educational spaces	7 (7%)
Commercial spaces	5 (5%)
Spaces of entertainment	2 (2%)
Total responses	98 (100%)

Note: Frequency of responses to the question "In what kind of urban settings do you typically wear headphones?" from 32 in-depth interviews.

The second factor influencing the use of headphones is the *activities* that people engage in (see Table 6.3). The most frequently reported activities are transportation-related, including travelling; commuting - typically, commutes to places of employment and in the case of students, commutes to campus; and layovers - for instance waiting for public transit to arrive at stations or stops. This compliments the findings discussed previously – that public transit is the public space in which people use headphones most frequently. Walking is the second most frequent type of activity, including, walking on streets, between transit stations and places of work, in the city, to parks, in parks, walking dogs, walking in public areas, waking to campus, walking in campus, walking to public restrooms, and just being out and about. In addition, fitness and physical activities such as doing organized sports, running, biking, exercising, and hiking; shopping and related activities including shopping for groceries, shopping at malls, and running errands also encourage the use of headphones. At a lower frequency, respondents reported using headphones during times of relaxation and unwinding in public places, typically while "sitting down and enjoying the park" and "hanging out in the park."

Table 6.3 Activities Influencing Use of Headphones

Type of Activity	Frequency of Responses and Percentages
Transportation-related	17 (32%)
Walking	13 (25%)
Physical activities	11 (21%)
Shopping	8 (15%)
Relaxing and unwinding	4 (8%)
Total responses	53 (100%)

Note: Frequency of responses to the question "When do you usually use headphones?" from 32 in-depth interviews.

People also use headphones when they are *feeling* a certain way. Three types of feelings were identified from focus groups and interviews. The first is people's feelings of introversion that people feel a need be reserved and not wishing to talk to anyone. For instance, one participant stated: "I use them pretty much any time, so I don't directly have to talk to someone." Another type of feeling is being in a bad mood. One participant stated that "[…] sometimes, not all the time, when I'm having a bad day, or when I'm in a bad mood […], I use it [headphones]." A final type of feeling is the need to listen to a particular type of audio. In the words of one participant, "I use headphones whenever I feel the need to listen to a song or a documentary."

Environmental circumstances or external conditions that are external and often beyond people's control encourage the use of headphones. Frequently, these are loud sounds in the urban environment generated by other people, such as people's chatter or the general noisiness of cities. Respondents stated that when faced with such circumstances, where control lies beyond them and in external environmental factors, they are typically encouraged use headphones. One participant in a focus group said: "[…] it's an open space with lots of people, you cannot control the noise by 20 other people. I use headphones to

help me focus, even if it is kind of distracting, I mean it's not like complete silence but at least it's noise you are in charge of."

Another factor affecting headphone use is whether people are *alone or with friends or family*. The findings from focus groups show that people are less likely to use headphones, with or without audio, when they are in the presence of people they know or even when they expect to encounter people they know.

People's decision to use headphones or not should not be understood as polar opposites but rather as a decision that lies along a continuum. While the decision to use headphones or not undoubtedly falls at the two extreme ends of this continuum, there also exists a middle ground where people alternate between the public and private sound environments. The way people straddle between these two sound environments is simply by using only one earpiece. Such instances have been reported only in public places, particularly on streets - "[…] Maybe if I had to cross a real busy street, I might pop one ear out just to be safe" one respondent said, or in public places just out and about in the city - "[…] if I use them outside its kind of rare and I only have one earbud on so that the other ear paying attention" another respondent said. Also, along this continuum of use/non-use lies the intermittent use of headphones which includes taking headphones off for brief periods of time; and modifying the level of audio by way of stopping, pausing, and reducing the volume.

Much like the understanding of when use headphones as was discussed in the paragraphs that preceded, the instances people do not use headphones (including instances people would take off headphones if already being used), can be understood in terms of three factors.

First, there are *places* in the urban environment where people would never use headphones, or if they already have headphones in use, would typically take them off. A list of these places is available in Table 6.4. The most frequently reported public place is the various kinds of neighborhoods in cities, particularly those that appear to be crime-ridden and those that people are unfamiliar with. This was followed on frequency by public parks; spaces like restaurants, diners, and pubs where people typically like to unwind; educational spaces, that includes classrooms and exam halls; streets; and spaces of entertainment such as exhibition halls and stadiums. Particularly in spaces of transit, all respondents that reported to not be using headphones stated that they do so in transit stations rather than on the modes of transport themselves – one respondent stated the following: "I never use headphones in train stations, not the train. If I'm on transit and the journey is very long, after I am comfortable with my environment I put my headphones on. But if I'm in the train station, I find myself very sensitive in a new environment and I want to know what is happening, especially when there is a lot of people around and everyone is constantly moving. I want to see who is watching me, who is observing me, those kinds of things. So, I will not use headphones at the train station […]". In addition, though mentioned only less frequently are public buildings; cemeteries; commercial spaces like shops; beaches; places that are generally quiet; places that are frequently crowded.

Table 6.4 Public Places Where Headphones Are Not Used

Types of Public Places	Frequency of Responses and Percentages
Crime-ridden neighborhoods	5 (19%)
Transit spaces	4 (15%)
Public parks	3 (11%)
Spaces of unwinding	3 (11%)
Educational spaces	2 (7%)
Streets	2 (7%)
Spaces of entertainment	2 (7%)
Public buildings	1 (4%)
Other: Cemeteries, Commercial spaces, Beaches, Crowded places, Quiet places	5 (19%)
Total responses	27 (100%)

Note: Frequency of responses to the question "Are there some urban settings where you would never consider using headphones in? What are some of those places? Why would you not use headphones in these places?" from 32 in-depth interviews.

In addition to places, there are also *activities* that discourage the use of headphones in public places (see Table 6.5). Social interactions are the most frequently occurring type of activity that discourages the use of headphones, and includes instances that people hang out with friends or family. However, it is not only when social interaction takes place in actuality that people are discouraged to use headphones, but also whenever there is a high probability for interactions to take place. One respondent stated that "usually when I got into shops or into more service-oriented places I don't use headphones just because I enjoy interacting with the staff. I usually wear over-the-ear headphones, so I mostly pull it down and then greet the staff and chit chat with strangers. Basically, whenever there is an opportunity to interact with people, in those situations I do not use my headphones." Social interactions were followed in frequency by walking and related activities such as crossing

a busy street; entertainment activities such as watching sporting events in places like stadiums also encourage people to not use headphones.

Table 6.5 Activities That Discourage Headphone Use

Types of Activity	Frequency of Responses and Percentages
Social interactions	9 (53%)
Walking	7 (41%)
Entertainment	1 (6%)
Total responses	17 (100%)

Note: Frequency of responses to the question "What are some of the instances that you would never use headphones or if you already are, would consider taking them off?" from 32 in-depth interviews.

Congruity is the final factor that encourages people to either not use or stop using headphones. It refers to instances where there is an overlap between how a person using headphones is feeling, their mood, and the type of sounds they long to hear and the public sound environment of places. In other words, when people's feelings and moods are congruent with the sound environment of public places, people feel encouraged to either not use headphones at all or take their headphones off. One respondent worded this as follows: "[…] let's take a mall. Sometimes there will be music playing that you don't like at all. In that case I will wear my headphones and just walk around. But some other times, if there is soothing music playing, I just won't mind listening to it. So, I'll take my headphones off." In addition to congruity between moods and feelings and the public sound environment, congruity between the place and its sound environment also plays an important role in people's decision to not use headphones. This refers to how well the public sound environment 'matches' or rather, is perceived as 'matching' by headphone users with the public spaces in which they are heard - "mostly if it's like an exhibition, they are usually playing something related to the event. Then I don't use headphones. And if I

go to a pub or something, I rarely do. The reason is that the music they play matches the setting, so I don't use headphones. I'll leave that mood just as it is" one respondent said.

The reasons *why* people do not use headphones or take them off if already in use are threefold. The first has to do with the *informational content* of the public sound environment. Public sound environments contain important information that often go unnoticed to people due to people's use of headphones. Therefore, when the public sound environments contain rich informational content, people either do not use headphones, or discontinue the use of headphones in order to pay attention to this information. For instance, "[…] at the railway station, when I don't know what time the train would come at odd hours, I want to listen and be attentive to the announcements going on. For instance, it's 2am and I don't know when the train is going to come. So, whenever I want to be conscious about what's going on, I'm not going to put my headphones on […]" said one respondent.

Situational awareness is another reason that people do not use headphones. "I generally prefer not to be wearing headphones while I'm walking around the city because I feel like I want to be aware of my surroundings and not be distracted" said one respondent. Situational awareness refers to not just being aware of one's surroundings but also being attentive towards it, like how one respondent stated that "there's a lot of people that go to Grand Central station, like I do. And, you know, people aren't paying attention. They run into each other and stuff like that. So, I tend to avoid using headphones because I want to have situational awareness I'm around a lot of people in a big space." The use of headphones often cuts people off from hearing what is going on in their surroundings. Thus, having situational awareness is important because "headphones somehow hamper

your senses […] it's always a risk when you're not fully attentive on the road or even while driving." In addition to being aware and attentive to the surroundings in actuality, people also do not use headphones to give the appearance of being aware of their surroundings to other around them, which is often done out of concerns for personal safety. One female respondent stated the following: "I don't want to give the impression that I'm not attentive to the people near me because they should know that I'm alert. So, I will not put headphones on."

A final reason why people do not use headphones is to *get close to nature*. People are often discouraged to use headphones in the presence of nature, particularly to "listen to the birds and feel the breeze" while being attentive to events taking place around them.

6.3 Playing Audio vs. Wearing Headphones

The *use* of headphones includes two different phenomena: *playing* audio on headphones and *wearing* headphones without any audio playing. 'Playing' audio on headphones simply means that a person chooses to play some form of audio on their headphones. Playing does not imply listening. Listening could be done either actively or passively, the latter, also referred to as 'hearing.' In 68% of the responses based on a total of 34 responses gathered from interviews (n = 34), respondents reported to exclusively *play* audio on headphones while at a frequency of 6% (n = 34), they report to *wear* headphones exclusively. 'Wearing' headphones on the other hand means that people have headphones on without any audio playing. What is noteworthy is that simply because people use headphones, it does not necessarily mean that they are always listening to something, for there could be instances where people wear headphones without playing audio. Discerning those who pay attention

to the audio (active listening) and those who do not pay attention to the audio (passive listening) among people is nearly impossible based on interview and focus group responses, as people frequently alternate between listening actively and passively – a transition that often happens unconsciously to people, leaving most unaware of it. Additionally, at a frequency of 26% (n = 34), respondents reported that they both play audio and wear headphones intermittently.

In public places, some respondents play some form of audio whenever they are using their headphones. As depicted in Table 6.6, this was reported at a frequency of 68% based on 34 interview responses (n = 34). These respondents have reported to never wear headphones without audio and have reported to take their headphones off and store them in their bags or their pockets when not playing. One respondent said: "I cannot ordinarily wear my headphones without audio playing, because it's not protecting me from the noise […]." Another group of respondents stated to be always wearing headphones without any audio playing in public places. This was reported at a frequency of 6% (n = 34). Also, at a frequency of 26% (n = 34) are respondents who alternate between playing audio and wearing headphones without audio in public places.

Table 6.6 Whether Playing Audio, Wearing Headphones Without Playing Audio, or Doing Both

Types of Public Places	Playing Audio	Wearing Headphones Without Audio	Both Playing and Wearing	Total responses
Public places, overall	23 (68%)	2 (6%)	9 (26%)	34 (100%)
Public parks	2 (67%)	1 (33%)	-	3 (100%)
Streets	2 (50%)	2 (50%)	-	4 (100%)
Miscellaneous outdoor spaces	1 (50%)	1 (50%)	-	2 (100%)
Public transit	3 (50%)	1 (17%)	2 (33%)	6 (100%)
Commercial spaces	1 (100%)	-	-	1 (100%)

Note: Frequency of responses to the question "In these spaces, are you listening to something on your headphones or merely wearing them without playing any audio?" from 32 in-depth interviews.

According to the interview responses, people who wear headphones without any audio playing in public places do so for four reasons. The first is for purposes of *noise cancellation or reduction*, where people wear headphones simply to block out ambient noise - "[…] I won't listen to anything, I just wear them so that I don't listen to ambience or other noises […]." The degree to which ambient noise gets blocked out when wearing entirely depends on the type of headphones that are used. For instance, with headphones with built in noise cancelling features, most low frequency ambient noises get cancelled, which is not the case in headphones that do not have this feature. Only a certain degree of noise reduction could be achieved with the latter type of headphones. People also wear headphones because long periods of listening incites *ear fatigue*, and sometimes even *boredom*. In such circumstances, people are found to momentarily stop playing audio while still continuing to wear headphones. A third reason that explains wearing headphones is *technological shortcomings* which are often beyond the purview of the headphone user. When faced with technical shortcomings, people, in a way, are forced to wear headphones

simply because playing audio on them is not an option. This has to do with factors involving the availability of phone signals, Wi-Fi connectivity, and sufficient battery both in phones and in headphones (if wireless). One respondent stated the following in this light: "[…] most of the time there is something playing, but I see myself with headphones without anything playing. It depends on Internet, data, whether I have access to Wi-Fi. Or just because sometimes I get tired of listening, but I still want the headphones to be there."

People's headphone use behaviors, particularly, whether they are playing audio, wearing headphones without audio, or intermittently doing both in a variety of public places are depicted in Table 6.6.

The audio people play on headphones in public places are of five types (see Table 6.7). These have been derived from 16 focus groups responses (n = 16). The most frequently played type of audio is music. This is followed in frequency by videos and all other video-enabled content; and audio tracks which include recorded sounds such as the sound of rain, the ocean, and bird song, for instance. At frequencies of 6% (n = 16) each are audiobooks and audio with informational content such as news broadcasts, or book readings.

Table 6.7 Types of Audio People Play on Headphones

Types of Audio	Frequency of Responses and Percentages
Music	8 (50%)
Videos	4 (25%)
Audio tracks	2 (13%)
Audiobooks	1 (6%)
Informational content	1 (6%)
Total responses	16 (100%)

Note: Frequency of responses to the question "What do you listen to?" from 4 focus groups.

People own a variety of different headphones (see Table 6.8) and use these various headphones for purposes of creating PSEs in public places. Some of the most common types of headphones that are used are circum-aural headphones otherwise known as over-ear headphones, used both in wired and wireless forms; earbuds, also used both in wired and wireless forms, the most common wireless form of earbud being the AirPod; and wired earphones. Respondents stated to using different types of headphones in different instances at a frequency of 85% based on a total of 20 focus group responses (n = 20), and to using a single type at a frequency of 15% (n = 20). This low frequency in the latter group of respondents, i.e., those who use a single pair of headphones in various instances and places is not because these respondents own only one pair of headphones. In fact, the web surveys revealed that 71% of respondents out of 134 that participated (n = 134) do so even though they own more than one pair of headphones (see Figure 6.1).

Table 6.8 Number of the Different Types of Headphones Owned

Number of Headphone Types Owned	Number of Respondents and Percentages
1	27 (20%)
2	76 (57%)
3	21 (16%)
4	7 (5%)
5	2 (2%)
Total respondents	133 (100%)

Note: Number of responses to the question "How many types of headphones do you own?" from 134 online survey responses.

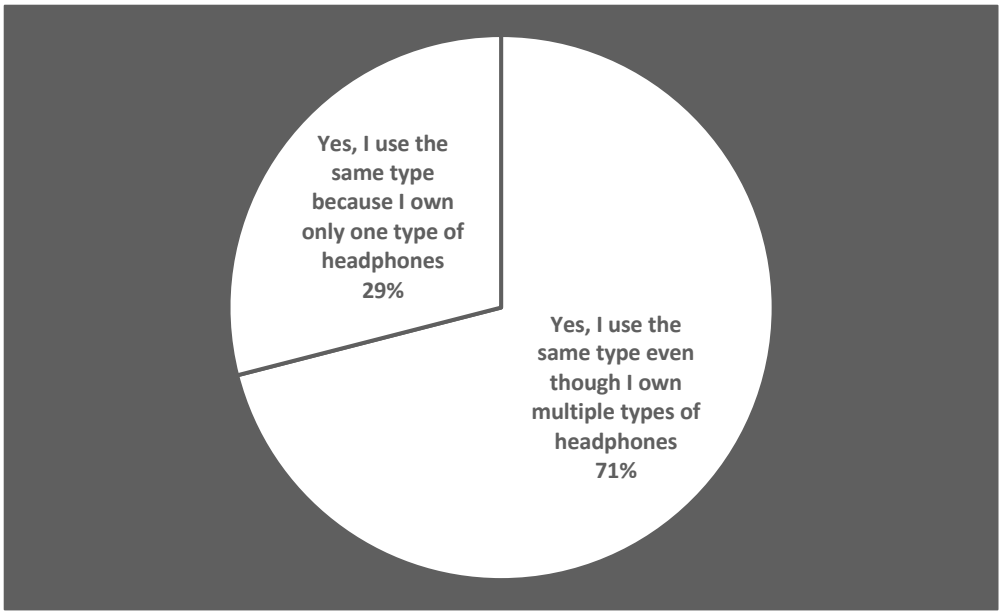

Figure 6.1 Use of headphones in public places regardless of the number of headphone types owned.

Findings from the focus groups reveal five factors that affect the use of different types of headphones in different places. The first factor has to do with the type of activities people engage in while using headphones, particularly, whether the activity warrants the person to be *moving or be sedentary*. When people are moving from one place to another they tend to use headphones that are smaller in size. When people are sedentary, they are inclined to use bulky headphones such as over-ear or on-ear headphones. One respondent stated that "[…] if I am seated, I have over-ear headphones and if I'm just walking around, I just use earbuds." Also, another respondent stated, "when I'm cycling especially, I wear just AirPods, just one of them on the right ear because on the left side are the cars and everything."

The *quality of the listening experience and the degree of immersion* in the PSE the person wishes to have is another factor affecting the choice of headphones to use in an instance. People have reported to use over-ear headphones when studying, watching

education-related videos, gaming, watching movies, and when "seriously" listening to music. This is because a more immersive PSE that is almost impermeable is required in these instances, a PSE that enables a high degree of concentration, and such a PSE could be created by over-ear headphones due to their inherent design and features. The same individuals reported to use headphones that enable a less immersive and more permeable PSE by using earphones and earbuds for purposes that do not require a high degree of concentration, such as casually listening to music.

The *features and capabilities* of headphones also determine the type of headphones people choose to use. Particularly, features such as noise cancellation and capabilities such as extended battery life appear to play a significant role in people's decisions. For instance, one respondent mentioned the following: "I use over-ear headphones when I'm commuting because it has noise cancellation." However, it is not always the availability of a particular feature that results in people choosing a type of headphones: sometimes it is the availability of a particular feature that discourages people from using certain types of headphones. For example, "I usually wear earphones because the noise cancelling in some headphones cuts me off from what's going on. With earphones I can hear what's going on in the world, so if I feel like someone's approaching me or if a car is coming, I can still hear it," one respondent said. With regard to the battery capacity of headphones, oftentimes wireless on-ear and over-ear headphones are abstained from use due the high amount of battery power they consume. For this reason, their batteries have to be charged quite frequently which is in contrast to other wireless headphone types, particularly, the AirPods, which have the ability to charge themselves when stored in their cases. This takes away the need for the headphone user to deliberately charge them – something that headphone users in numerous

occasions mentioned that they forget to do - “I use over-ear headphones once in a while but not as often. Just because you have to charge them every so often. And while you charge them you can’t really use them. That’s why I prefer having wired earphones instead.”

The *design* of headphones makes certain headphone types suitable for certain instances more than others. For instance, people often feel discouraged to use over-ear or on-ear headphones in educational spaces, particularly in classrooms. Their bulky design is eye-catching therefore people feel that using such headphones may be disrespectful, especially in educational spaces where people are expected to be paying attention and actively engaging in discussions. Earbuds and earphones are the preferred types of headphone in such circumstances where there is a need for people to be discrete about their use of headphones. The design and placement of earcups of headphones also affect the circumstances in which people use them. For instance, headphones with open back earcups are hardly used in outdoor urban spaces. This is because with open backs, audio from the headphones bleed out and people surrounding the listener would often be able to hear what the listener is privately listening to. And at the same time, the listener too is able to hear public sound environment on top of their PSE. The extremely porous nature of these headphones makes them inappropriate to be used in outdoor spaces. Additionally, the engulfing nature of earcups on the user’s ears result in perspiration to gather in the ears. As a result, over-ear or on-ear headphones with such engulfing earcups are replaced with earbuds and earphones especially in spaces where physical activities take place, such as in gyms. At the same time, the placement of earcups double as a means of insulation especially in times of cold weather, during which people often use them not only to create

PSEs but also for purpose of keeping them warm. The lightweight type of headphones – earbuds and earphones – are also extremely popular in certain instances. Particularly, with regard to the use of earbuds such as Apple's AirPods for instance, people appear to be apprehensive to use them due to their small size and wireless nature. "I feel like I'm going to lose those", "I feel like it'll fall out of my pocket. I don't trust myself" are some of the thoughts respondents had about using them, especially in urban spaces.

The final factor that determines the type of headphones people use in public places is the *ease of use*. This does not simply refer to the ease of use in a literal sense but also extends to include aspects of comfort and convenience. Ease of transporting headphones also plays a major role in headphone-type decisions. For this reason, earbuds such as AirPods are favored by most because of their small size and wireless nature which makes portability easy compared to the bulky on or over-ear headphones, which are often disfavored on the basis of portability. In this light, a respondent stated the following: "I use wired earphones for short distance travel and the big bulky headphones for long distance travel. That's because for long distance travel I usually carry many things, so I have space to fit the bulky headphones." The disfavor towards on and over-ear headphones also extends to notions of comfort, with people responding that that they are not very comfortable to be used especially for extended periods of time.

6.4 Experiencing Public Places

Using headphones has become so engrained in most people's lives that they have become just as important to these people as their cellphones (SOL Republic, 2014). Statistics show that on average, people use headphones for nearly 4 hours every single day (SOL Republic,

2014). Therefore, it is interesting to find out what the impact would be on people's experiences if they had to or were forced to completely give up using headphones. While these scenarios are extremely unlikely to occur, the possible impacts on experience could be categorized as negative impacts, positive impacts, and alternative courses of action, based on the responses received from the focus groups.

The *negative impacts* could further be categorized based on the impacts to people's feelings, people's health, and their sense of peace. *Feelings* are expected to be negatively affected with people reporting that they would feel "annoyed", "irritated", "on the edge", and "stressed" if they had to stop using headphones altogether. These feelings arise because people would be vulnerable to the various sounds of the public sound environment, particularly, to the sound environments projected out loud by other people. This is because it is expected that people would be at more liberty to broadcast their personal music out loud to the public sound environment in the absence of headphones, causing nuisance to those around them. People also would feel overwhelmed by the different kinds of sounds that can be heard in the public sound environment. People often feel like there is "too much input" to be processed in the public sound environment, and as a result, their "senses would be dialed up" if they had to give up constructing a private sound environment for themselves using headphones. For some others, this overwhelming feeling is experienced as follows: "I just get so irritated over small repetitive noises. There will be some days where just the sound of people talking too loud is too much for me to handle." When people are not using headphones, that gives them the opportunity to be in touch with their own thoughts. More often than not, this mental space leads to people having "distracting thoughts", "overthinking", being "unable to concentrate", or being immersed "in their own

worlds" – thoughts people typically do not wish to have. People also commented on how difficult it would be to resort to not using headphones at all. In addition to being "very difficult" and "rough", respondents also stated that they "could not imagine going a day without headphones."

While not a dearth of responses were recorded on the negative impacts on people's *health,* people were concerned about turning obese as working out or engaging in any kind of physical activities was impossible without using headphones. One respondent, on this note, communicated their concerns as follows: "I'd probably get fat 'because I hate exercising without headphones, honestly, I hate running without headphones."

Although the negative impacts outweigh the *positive impacts* of not using headphones, several positive impacts nevertheless were reported. An increase in social interactions is one positive impact as people claimed that they would be inclined to talk with strangers and engage in casual conversations more often if they were not to use headphones in public places. It also gives people the opportunity to share their audio with those around them who show interest in listening to what they are privately listening to, increasing chances for social interaction among strangers. A respondent stated the following: "I'm on the shuttle bus and I'm listening to the news, I've had people ask me because I have turned it like really low to 'oh, turn it up, what's happening?.' It gives me the opportunity to share and puts me at ease about listening without EarPods in public."

Because headphone use has become a staple in most people's lives, respondents claimed that they would take up *alternative courses of action* to still create PSEs even if they had to stop using headphone altogether. Two alternatives were stated for each of the ways in which headphones are typically used - playing audio on headphones and wearing

headphones without any audio playing. In instances that headphones are typically used to play audio, it was reported that people would still continue to play audio on their mobile devices, however, at very low volumes. A respondent explained this by saying that "I have discovered lately that I can get away with not using headphones and turning the volume really low." The second alterative course of action corresponds to instances that people wear headphones without playing any audio. In such instances, using passive devices such as earplugs to create PSEs was reported. "If I had to stop using headphones altogether, I'd use earplugs, to completely block sound out," one respondent said in this regard.

CHAPTER 7

USE OF HEADPHONES IN PUBLIC PARKS

People most frequently visit parks on purpose. The responses from interviews confirmed that respondents visit parks on purpose at a frequency of 53%, based on a total of 30 interview responses (n = 30). For these respondents, parks are a destination. At the same time, at a frequency of 13% (n = 30), respondents reported to visit parks *en route* to someplace else. For these respondents, including the following respondent, regardless of the purpose of their visit the park is not a destination, but rather a public space that they happen upon - "usually when I'm in parks it's because I'm walking somewhere, and walking through the park is the shorter route. I don't remember the last time I went to a park for the purpose of sitting there and enjoying the weather." There is also a third group of respondents whose decision to visit parks fluctuates between deliberation and opportunity, at a frequency of 33% (n = 30). They are the ones who plan and intentionally visit parks but also on occasions, visit parks when an opportunity presents itself or out of necessity: "most of the time, if I'm going to a park it means I'm actually going there on purpose. But there are certain occasions where I would rather sit and kill my time because I've got something else happening but that's not going to happen for a while, and there's no other place that I can go so I will just sit there in the park for half an hour maybe because I have to kill time" said a respondent.

People visit public parks for a variety of reasons, as evident by the interview responses. *Socializing* is one reason that encourage people to go to parks. This includes meeting with friends, family, or colleagues and causally hanging out with them. However,

socializing has recently been significantly impeded by the global pandemic and the safety procedures that have been prescribed: "before COVID-19, I would go to parks socialize but not anymore" said one respondent. The opportunity to engage in *physically taxing endeavors* is another reason people go to parks. This includes physical endeavors such as walking, jogging, running, exercising and working out, and engaging in organized recreational sports either individually (such as canoeing or kayaking) or as groups (such as soccer).

Parks are ideal places for people to *get close to nature*. They allow people to be exposed to the elements of nature, such as sunlight and fresh air. They allow people to enjoy the weather when it is pleasant. They provide an opportunity for people to be outdoors and to enjoy nature, particularly the beautiful sceneries, flora, and fauna. Parks are places people go to in search of *respite* from everyday life and for a change of scenery. Parks also provide a means of escapism, allowing people to temporarily escape or take a break from their homes, places of work, or from the city, as according to one respondent, "they [parks] are a relief from the hustle and bustle of the city." With this escapism that parks provide comes people's need to be left alone or *be isolated*. Often, people have reported to go to parks, merely to be by themselves without any distractions simply because of the prospect of peace that parks offer. People go to parks for an opportunity for *relaxation*, not only of the body but also of the mind. These are places that people go to rest at, unwind, hang out, and also to refresh and rejuvenate the minds. Parks facilitate certain *leisure activities* by designating its various spaces for these activities. For instance, people often go to walk or play with their dogs at the dog playgrounds; take children to play at the kids' play areas; the benches, and other seating areas for watching other people;

the lawns for picnicking, and for other miscellaneous leisure activities; and larger open spaces to host various public events such as festivals and musical shows. A small number of people go to parks to *work, study, or read*: “I sometimes go to a park to work. I like to get some fresh air in and work through for an hour or so. When I feel tired of sitting in my office and working, I'll go to a park and sit there and work” said one respondent.

7.1 Reasons for Using Headphones

Regardless of whether people play audio on headphones or wear them without audio, the reasons why people *use* headphones in parks in an overall sense can also be understood in terms of 14 factors (see Table 7.1). Data depicted on Table 7.1 is based on 502 online survey responses.

Table 7.1 Reasons Why People Use Headphones in Parks

Types of Reasons	Frequency of Responses and Percentages
To relax	70 (14%)
To listen to something particular	58 (12%)
To keep busy or entertained	57 (11%)
To concentrate on something, such as a task at hand	45 (9%)
To reduce or cancel outside ambient sounds that I do not wish to hear	44 (9%)
For convenience, including to make or receive phone calls hands free	41 (8%)
To be less disturbed by the surroundings	38 (8%)
To be socially unavailable from other people	34 (7%)
To make time go by faster	29 (6%)
To avoid causing nuisance to others with my audio	27 (5%)
To have a more intimate listening experience	24 (5%)
Out of habit	23 (5%)
To relive particular past experiences tied to certain audio	7 (1%)
To relieve any disorders I sometimes experience, such as tinnitus, PTSD, and ADHD	5 (1%)
Total responses	502 (100%)

Note: Number of responses to the question "When you are in a public park, why do you use headphones regardless of whether or not you are playing any audio?" from 134 online surveys.

Without regard to whether people play audio or wear headphones without audio, the reasons why people use headphones in the three selected parks are depicted in Table 7.2. According to the total of 122 responses (n = 122) gathered from the on-site surveys at Washington Square Park, the most frequent reason why respondents use headphones is to listen to something in particular. In Madison Square Park, people reported to use headphones most frequently for the same reason. In Tompkins Square Park however, the most frequently reported reason for headphone use is for purposes of relaxation. In fact, using headphones for relaxation was frequently reported in Washington Square Park as

well, tied equally in terms of frequency with purposes of listening to something in particular.

Table 7.2 Reasons Why People Use Headphones in Washington, Tompkins, and Madison Square Parks

Reasons	Washington Square Park	Tompkins Square Park	Madison Square Park
	Frequency of Responses and Percentages		
To listen to something in particular	14 (11%)	10 (13%)	11 (17%)
To relax	13 (11%)	13 (16%)	10 (16%)
To reduce or cancel outside ambient sounds that I do not wish to hear	12 (10%)	1 (1%)	5 (8%)
To be socially unavailable from other people	11 (9%)	5 (6%)	2 (3%)
For convenience, including to make or receive phone calls hands free	11 (9%)	7 (9%)	6 (10%)
To keep busy or entertained	10 (8%)	12 (15%)	10 (16%)
To concentrate on something, such as a task at hand	8 (7%)	2 (3%)	3 (5%)
To have a more intimate listening experience	8 (7%)	6 (8%)	2 (3%)
To be less disturbed by the surroundings	7 (6%)	5 (6%)	4 (6%)
To avoid causing nuisance to others with my audio	7 (6%)	4 (5%)	2 (3%)
To relieve any disorders I sometimes experience, such as tinnitus, PTSD, and ADHD	6 (5%)	2 (3%)	1 (2%)
Out of habit	6 (5%)	5 (6%)	4 (6%)
To make time go by faster	5 (4%)	3 (4%)	3 (5%)
To relive particular past experiences tied to certain audio	4 (3%)	5 (6%)	-
Total responses	122 (100%)	80 (100%)	63 (100%)

Note: Frequency of responses to the question "When you are in this park, why do you wear headphones regardless of whether or not you are playing any audio?" from 32, 19, and 17 on-site surveys conducted in Washington, Tompkins, and Madison Square Parks.

7.1.1 Reasons for Playing and Not Playing Audio

People's use of headphones could be understood in terms of two avenues: (1) reasons why people play audio on headphones, and (2) reasons why people wear headphones without audio playing.

The reasons why people play audio when in parks extend beyond their need to listen to audio. In fact, 11 reasons were identified based on interview responses that explain why people play audio on headphones when in parks (see Table 7.3).

Table 7.3 Why People Play Audio on Headphones in Parks

Reasons Why People Play Audio	**Frequency of Responses and Percentages**	**Frequency of Responses and Percentages**	
Affects feelings	13 (24%)	Relaxation	5 (38%)
		Peace and tranquility	3 (23%)
		Mood	2 (15%)
		Enjoyment	2 (15%)
		"Feel good"	1 (8%)
		Sense of freedom	1 (8%)
		Total responses	13 (100%)
Need to listen to/hear audio	9 (16%)	Listen	6 (67%)
		Hear	1 (11%)
		Unspecified	2 (22%)
		Total responses	9 (100%)
For better concentration	9 (16%)	Avoid distractions	5 (56%)
		Focus	4 (44%)
		Total responses	9 (100%)
Compliments activities	9 (16%)	Increases efficiency	4 (44%)
		Encourages activities	3 (33%)
		Keeps busy	2 (22%)
		Total responses	9 (100%)
Be isolated	6 (11%)	Be socially unavailable	4 (67%)
		Be in a "bubble"	2 (33%)
		Total responses	6 (100%)
Reduce/cancel noise	3 (5%)		
For reminiscence	2 (4%)		
Temporal reasons	1 (2%)		
Therapeutic reasons	1 (2%)		
Avoid causing nuisance	1 (2%)		
Better quality of listening	1 (2%)		
Total responses	55 (100%)		

Note: Frequency of responses to the question "Why do you play audio on headphones when you are in a public park?" from 32 in-depth interviews

Audio affect people's *feelings* which is an important reason why many people have indicated to play audio on headphones. This was the most commonly identified reason among other reasons that encouraged respondents to play audio (see Table 7.3). The feelings that audio trigger is different from person to person. However, several types of feelings recurrently emerged from the interview responses which are also depicted in Table 7.3. First is feelings of *relaxation*, reported at a frequency of 38% (n = 13). "I find music very relaxing. Sometimes I listen to podcasts so it's an opportunity to both relax and also absorb information" one respondent stated. At the same time, feelings of *peace and tranquility* are brought about by audio. Audio also improves people's *moods*: "when I'm taking a stroll and I really want to boost my mood while walking, I play audio, because compared to not playing audio and walking, when I'm playing audio and walking I just tend to walk more" a respondent stated. Not only does this indicate how audio boosts people's mood but also shows that their productivity increases, the latter which will be discussed in detail in the paragraphs to come. People have indicated to *enjoy* their time in parks more when there is audio playing on headphones: "[…] whenever I listen to songs, then I think I can enjoy more" a respondent said. Audio also help respondents *"feel good"* and lastly, give people a sense of *freedom* that they would not otherwise feel had there been no audio playing.

The need to *listen to or hear audio* is the second-most frequently reported response that explains why people play audio on headphones in parks (see Table 7.3). Respondents admitted, at a frequency of 67%, based on 9 interview responses (n = 9) that the reason they play audio is to actively *listen*. These are the people who pay attention to the content of the audio for purposes of pleasure, entertainment, and to seek information: "sometimes

I listen to podcasts so it's an opportunity to both relax and also absorb information" said one respondent. At a frequency of 11% (n = 9), respondents also admitted to playing audio for the purpose of *hearing* it without paying attention to the content. For these respondents, the audio that is playing serves as background sounds – something that is entertaining, pleasurable, and complements the activities they are pursuing. A respondent elaborated this as follows: "in a park even though I have my headphones on and have something playing, I might not be actively listening. If I'm reading a book, I use my headphones to have some reading music playing in the background to avoid being distracted by other noises around me."

Playing audio on headphones enables greater *concentration* (see Table 7.3). It gives respondents, the impetus to *focus* on something, be it a task at hand or their personal thoughts. "In the park when I exercise, I'm doing something, and I need to focus on that. The music helps me focus," said one respondent while another said: "I play music on my headphones to drown out any other noise or if I have to think about things." This ability to concentrate when there is audio playing comes at a cost - for people to be able to concentrate on one thing means that they would be distracted by everything else happening around them. This concentration-distraction paradox that playing audio creates, promotes people's concentration towards certain aspects, while taking away their concentration or even leaving them distracted from other aspects. This distraction may be good or bad. For instance, for the following respondent, the distraction that audio provides is a good one: "it distracts me from things that are bothering me", they said. These "things" that bother this respondent are mostly internal to themselves, such as their thoughts, feelings, and disabilities they have. In other words, playing audio help people circumnavigate the

internal chaos that may be going on in their lives. At the same time, for some other respondents, the audio playing on headphones serves as a means of *avoiding distractions* (see Table 7.3). For these respondents, these distractions are largely external. For one respondent, playing audio "helps avoiding distractions like other people, sometimes a skateboarder that is going by." For another respondent, "if there is a very distracting conversation or if there's noise around like kids playing and all that I find that distracting, that's when I go for headphones and play audio." And for the following respondent, "90% of the time, I play something on my headphones. When I'm outside at a park I would rather remove my headphones and listen to the nature itself because there won't be any distractions. But if there are people, say for example, if it's a pretty crowded place although it's a park, I would listen to music. But it's pretty rare nowadays because of this COVID-19 pandemic, because people can't gather in groups more than 5. So, the noises in parks are lesser compared to before."

People also play audio on headphones because the audio, in different ways, *compliments the activities* that people pursue (see Table 7.3). For instance, some respondents require audio to be playing to engage in activities (see Table 7.3). In parks particularly, when engaging in activities like running, exercising, or other forms of physically taxing endeavors, people play audio on headphones. "If I'm going to an urban park, I'm mostly by myself and going for a run, and if I'm running, the music has to be on" a respondent said. At the same time, for other respondents, playing audio on headphones gives them "something to do" and "keeps them busy." Lastly, playing audio encourages people to do more. At a frequency of 44% (n = 9) (see Table 7.3), respondents have reported that playing audio on headphones makes them more efficient - "personally, I have felt that

music while working out gives you better efficiency while working out so you can perform better, you can exercise better. For me that's the sole reason that I use them when working out in public parks." Audio also give people an energetic boost to do their activities - "when I want to run I have a playlist dedicated to my workouts and I play that. It gives me a little boost, like the rhythm of my walking and jogging. So, the running pace is set" said one respondent. Audio makes people more productive, according to a respondent who stated the following: "when using headphones and walking, I just tend to walk more when I have my headphones on. Because I tend to measure distance using songs as well. So, if I walk for 10 songs I have already walked for 2.5 to 3 kilometers already. Which if I didn't have headphones I wouldn't do."

Purposes of *isolation* (11%, n = 55) is another reason why respondents also play audio on their headphones in parks (see Table 7.3). This isolation that people seek by playing of audio manifests in two forms. The first, enables people to keep to themselves and engulf in sort of a "bubble" when there is a lot of sounds around them: "if there is a very distracting conversation or if there's noise around like kids playing and all, and if I find that distracting, that's when I go for headphones. I just want some time for my own" said one respondent. Another respondent stated: "for me, it's more interesting because putting pair of headphones and listening to something keeps me in my own bubble so I don't have to pay attention to someone else or something that's going to happen around me, which is a part of the personality that I have. I would rather listen to the music that I like, which keeps me in my bubble. I can look around still, so it doesn't mean that I'm not interacting with something else. But that I would rather be in my bubble with my music." The second form through which people seek isolation is by playing audio on headphones

to constrain their social availability and to interface social relationships. A respondent explained this as follows: “I think I just want to create a barrier between me and others, that’s why I play something. To make sure that no one is interrupting my space in any way.” For a different respondent, audio on headphones serve “[…] as a shield for people to not approach me” enabling them to be alone, by themselves. This solipsism is paradoxical. While people play audio to be alone or physically separate from others around them, they inadvertently allow themselves to be ‘close’ to a hyperreal otherness. These hyperreal others, which correspond to various forms of audio that people choose to play, allow people to be close to others and make them feel like they are not alone. In other words, by playing audio on headphones, people choose to separate themselves from immediacy and instead, be connected to an abstract otherness that exists in a purely auditory dimension. “I play audio to avoid other people approaching me when I'm not in the mood or when I feel I wouldn’t be safe. And also, to not feel alone,” said one respondent. Another respondent highlighted this paradoxical nature in their response as follows: “if I’m walking in the park by myself, I play music, so I feel that I am entertained by something and I am not alone. And it serves also as a shield for people to not approach me. And sometimes, not all the time, when I’m having a bad day, or when I’m in a bad mood or I just don’t want to interact with people, I use it [headphones]. Also, for the purpose of people not interacting with me.”

The purpose of *reducing or cancelling noise* also encourages respondents to play some form of audio on their headphones when in public parks (see Table 7.3). People do so to block out or drown outside noises when in public parks. The following respondent for instance stated, “I use headphones to drown out any other noise” in this regard.

Sound has properties of *reminiscence* which encourages people to play audio on their headphones when in parks (see Table 7.3). The following respondent is a serious advocate of this and explained how audio helps them reminisce or recall memories: “while doing certain activities if I listen to certain soundtracks, and if I listen to those somewhere down the line, it helps me revisit those memories or trigger those old feelings. That's helpful. And when I have certain playlists already set up for a certain amount of time, it helps me look back, like 6 months ago, a year ago, what was I listening to and what was I doing.”

People also play audio on for *temporal reasons* (see Table 7.3). This includes the feeling people get that time goes by faster when there is audio playing as opposed to when there is no audio playing. “Audio is very useful to just let the time go by,” stated one respondent, in this regard.

A number of respondents play audio because of the *therapeutic* audio possesses (see Table 7.3). Particularly, these are people who find public parks to be overwhelming, or those who suffer from other hearing and non-hearing disorders such as tinnitus, depression, PTSD, and Hyper Vigilance. A respondent who suffers from several such disorders stated that the reason they play audio when in parks is because: “[…] it's therapeutic. It distracts me from things that are bothering me […].”

Avoiding causing nuisance to others around them in parks is another reason why people play audio (see Table 7.3). These people do so out of concern and respect for others. One respondent explained their concerns as follows: “I don't want to play the music out loud to make other people feel uncomfortable. That is one of my major concerns.” Lastly, the unparalleled *quality of the listening experience* that headphones provide is another

reason why people play audio on them (see Table 7.3). This listening experience is more intimate than when audio is being played out loud. “Headphones can actually make you feel the music. You get surrounded by all the instruments, it's like the music is played inside you. It's different from when you play it out. I wouldn't want to play the music out loud in the park” said one respondent.

People’s use of headphones could also be understood in terms of the reasons why they wear headphones without playing audio. The online surveys revealed that the number of respondents that always wear headphones without audio in parks is 0% based on 113 respondents (n = 113), while the number of respondents that always play audio on headphones is 69% (see Table 7.4). However, 31% of the respondents reported to do a mix of both, i.e., to play audio sometimes and just wear headphones during others.

Table 7.4 Playing Audio vs. Wearing Headphones in Parks

Status of Audio	Number of Respondents and Percentages
Always play audio	78 (69%)
Wear the headphones without playing audio	-
Do a mix of both, play audio sometimes and merely wear other times	35 (31%)
Total respondents	113 (100%)

Note: Number of respondents responding to the question “When you wear headphones in a public park, do you: Always play audio, Wear the headphones without playing audio, or Do a mix of both with audio playing sometimes and no audio playing other times?” from 134 online surveys.

Though the number of people that just wear headphones in parks is less than the number of people who play audio on them, it is important to understand the reasons that prompt people to just wear headphones without audio in public parks. Nine reason that explain this have been identified based on focus group and interview responses. The first is the need people have to be *aware of their surroundings*. This awareness of surroundings comes in two forms: the first, out of concerns for personal safety, and second, for purposes

of getting close to nature and listening to naturally occurring sounds. With regard to concerns for safety, respondents have admitted to not play audio even though they may have their headphones on in parks, particularly at night. “Usually if it’s at night, or it’s dark and I know that I need to get out of there fast, I will turn the audio off. Because I’m not messing around. That’s the only instance [of wearing headphones]” said one female respondent. The same respondent brought up concerns of their family regarding playing audio on headphones, as well as some protective measures they take: “my grandma always says, ‘whoa whoa whoa, you have those headphones on, like you could get killed or something like that.’ I understand that, so I always keep a pepper spray with me.” Aspects of safety do not only stand from the point of criminal victimization but also extends to include notions of personal safety. A respondent said: “maybe if there’s an emergency or something that I feel compelled to pay attention to the outside world, or if there’s maybe like a construction site and I’m passing by, I just want to make sure I can hear what people are saying, just to be safe.” On the front of getting close to nature and listening to naturally occurring sounds in parks, two respondents had the following to say: “if there’s a lot of things to see in the park, like beautiful trees with flowers, or fountains, or birds chirping around, then of course I don’t play anything on my headphones” and “when I'm enjoying the park, I'm out in the nature and I want to listen to the nature. I want all my five senses to be immersed and have the experience of the nature. I can listen to my music at home even. The reason I came to the park is to experience it.” However, bird song is not the only type of naturally occurring sound in parks that people like to hear. Respondents have reported to be interested in hearing the sounds of people as well – the chatter, the laughter among others.

However, not all sounds of people are pleasant and worthy of being listened to. A respondent explained this as follows: "you come to a park to calm yourself but when there are noises that you don't want to hear there. Then it disturbs your mood, and I don't like it. So, I might as well wear headphones without listening to anything and then just wander around the park. It could be kids; it could be people that are louder than they are supposed to be." In such instances, people wear headphones for the purpose of *cancelling or reducing noise* that are perceived to be intrusive or deemed unworthy of being listened to. More often than not, and as the previous respondent described, these are sounds that are unpleasant, loud, and seemingly out of place.

Headphones serve as a form of *insulation*, especially in the winter during freezing weather. During such times, headphones often double as earmuffs, in addition to serving as a private listening apparatus.

Also, when the activities people engage in in public parks require their undivided attention and *concentration* expended towards them, people have reported to temporarily halt the audio playing while still having their headphones on. For instance, one respondent stated to just wear headphones when they are in the park with their dogs. This respondent does so in attempt to "keep a closer eye on them [the dogs]" in order to keep in the dogs in line and adequately disciplined.

Purposes of *isolating* themselves, especially, socially, is another common reason why people choose to wear headphones even without any audio playing. The chances of people being approached by strangers in public parks, be it to ask for directions, for promotions, or donations, are reasonably high and having headphones on serves as a non-verbal cue for these people to be left alone, or as Bull (2009) calls it, a "visual do not disturb

sign." In line with this, one respondent said: "I need some quiet time alone. But if I'm in public, I can't get that. Using headphones is therefore the closest approach I have."

Though one of the main reasons for wearing headphones is for people to make themselves socially unavailable, on some occasions, other people do not tend to honor this. People have reported to experience extended periods of time without audio simply to *interact* with a stranger, friend, or a family member out of obligation and courtesy. "If my mom is talking to me I'll turn off the music, but I'll keep my headphones on" said one respondent, and "[…] if I meet someone so I started to like put it [the audio] on pause to have a conversation" said another.

People's *mood* is another factor that encourages them to wear headphones. Typically, when people are not in the mood to listen to any audio, they would wear headphones in silence. In such instances, having headphones on is usually prompted by previous episodes of listening.

People sometimes *forget* to turn on the audio after putting headphones on. In such instances, they continue to be wearing headphones with no audio playing on them. A respondent explains this as follows: "I have caught myself once or twice not playing any music. I usually put them [headphones] on to listen to something. I probably got a phone call and then I forgot to put it [audio] back on to the playlist or something."

"If I have headphones on and I'm done with the workout, I don't want to listen to the music anymore, and I don't have a bag or something, I will let it be on my head rather than holding on to it or making my bag heavy by putting them in it" said one respondent, indicating that *convenience* too plays an important role in people's decision to wear headphones. The aforementioned participant for instance, chooses to wear headphones

because it is convenient to do so than having to carry it either in their hand or in their bag after an exhausting day at the park.

7.1.2 Variations in the Use of Headphones

The temporal aspects of headphone use, particularly, whether use varies by time of day, day of week, and time of year is worth understanding, and if use does vary, the reasonings behind such variations are discussed in the paragraphs that follow.

A majority of respondents admitted that the time of day renders no difference to their headphone use, while 11% (n = 28) of the respondents claimed that such differences have not occurred to them (see Table 7.5). However, it was also found that 43% (n = 28) of the respondents admitted to differential headphone use. This means, that certain aspects of headphone use, which will be discussed in the paragraphs to come, have found to vary between morning, afternoon, evening, and night times for these respondents. The primary reason behind the differential headphone use during different times of the day is the need users have to be *vigilant* of their surroundings. The only significant difference in headphone use was reported between day and night times, while no significant differences were during other times. This is particularly relevant for some headphone users who visit parks at night, which is when the aspect of personal safety comes into play.

Table 7.5 Use of Headphones in Parks vs. Time of Day

Whether Time of Day Affects the Use of Headphones	Number of Respondents and Percentages
Yes	12 (43%)
No	13 (46%)
I'm not sure	3 (11%)
Total Respondents	28 (100%)

Note: Number of respondents in response to the questions "Does your use of headphones in parks differ according to the time of day? Can you tell me why?" from 32 in-depth interviews.

While it has been established that headphone use differs between day and night times for a near-majority of headphone users in parks, the particulars of these differences in use are important to understand. Based on the interview responses, these differences are four-fold. First, respondents have admitted to only wear headphones without any audio playing, not listen to the audio playing, and in some instances, not use headphones, especially during night times. "[…] At night I probably wouldn't listen to headphones. I wouldn't listen to anything just because I would want to be more alert of my surroundings. But as far as how it changes throughout the day, I can't think of any major changes" said one respondent. The second difference lies in the type of headphones used, which a respondent explained as follows: "it [time of day] will influence the kind of headphones I'm using, whether I'm using over-ear headphones or in-ear monitors. It's really based on comfort and whether I have cleaned my earpieces out in the morning because I've got to clean them, got to keep all the grease out and everything when you're sticking stuff in the ears all the time. Morning times, I typically stick with over-ear headphones, afternoons is a toss-up, and evenings I gravitate a bit towards in-ear monitors." The third difference is in the volume at which audio is played. A respondent explains this as follows: "[…] during the morning, I mostly listen to music or any sort of audio with a higher volume. I feel like it somehow awakes me, that's why if I play audio with a higher volume. It makes me feel energetic; I feel active. It's definitely different during the night. I mostly decrease the volume. I can't listen to audio in the same level as I did in the morning. In the night, I feel calm, and I want to relax. That's why I can't listen in the same level." The final difference is the different types of audio that users choose to play. "[…] In the morning or if it's later in the day I would be playing something light, happy. In the morning I wouldn't be listening

to like heavy rock or screamo or something heavy like that, but something calm like pop or jazz music" said one respondent.

In investigating whether the use of headphones varies by the day of week, particularly, whether there are significant differences between weekdays and weekends, it was discovered that for 75% of the respondents in parks based on a total of 28 interviewed (n = 28), such differences did not affect their headphone use, while 4% (n = 28) claimed to be oblivious to such nuances (see Table 7.6). However, 21% (n = 28) of the respondents admitted to using headphones differently during different days of the week.

Table 7.6 Use of Headphones in Parks vs. Day of Week

Whether Day of Week Affects the Use of Headphones	Number of Respondents and Percentages
Yes	6 (21%)
No	21 (75%)
I'm not sure	1 (4%)
Total Respondents	28 (100%)

Note: Number of respondents in response to the questions "Does your use of headphones in parks differ according to the day of week? Can you tell me why?" from 32 in-depth interviews.

The three most common reasons that explain the differences in headphone use in parks by time of day have been identified based on the interview responses. The first, has to do with people's *habits*, such as visiting a park only during predetermined days of the week. For instance, "I only go to parks on weekends. On weekdays, I rarely get to go out" said one respondent, which limits their headphone use only to certain days of the week. The second reason has to do with people's *moods*. As the following respondent stated, "if it's in the week, I might listen to podcasts or some of the stock market stuff, and during the weekends, to music. It depends on the mood. If I am in a good mood maybe some rock songs, if I am a little bit sad, maybe I'll listen to some old 1950s music." The final reason

that explains differential headphone use during the week is the need to *cancel or reduce noise*, as certain sounds can be particularly louder during certain times of the week. "During the weekdays, I wear my headphones more just because there's so much more commotion going on; so many people and background noises to drown out. On the weekends, I might use it less because it's calmer and quieter and everyone is in a more relaxed state of mind" said one respondent.

Further, 57% of the respondents, also based on 28 respondents interviewed (n = 28), reported that their use of headphones does not change during different times of the year, while 4% (n = 28) admitted to not have taken note of such differences (see Table 7.7). On the other hand, 39% (n = 28) admitted that headphone use varied by the time of year, for four reasons.

Table 7.7 Use of Headphones in Parks vs. Time of Year

Whether Time of Year Affects the Use of Headphones	Number of Respondents and Percentages
Yes	11 (39%)
No	16 (57%)
I'm not sure	1 (4%)
Total Respondents	28 (100%)

Note: Number of respondents in response to the questions "Does your use of headphones in parks differ according to the time of year? Can you tell me why?" from 32 in-depth interviews.

First, headphones double as earmuffs and serve as *insulation* during winter months, enabling them to be used more often during cold months compared to the others. In addition to an increased usage in the colder months, the *types of headphones* used also differ by the time of year. Typically, headphones that engulf the ear, such as over or on-ear headphones are less sought after during hot summer months compared to ones that do not engulf the ear, such as earphones. In one respondent's words, "if I take a long walk in the park, and I

know it's going to be really, really hot, I'll switch from over-ear headphones to earbuds, which do not make the ears hot and sweaty." In addition, the weather during different times of the year enables various kinds of *activities* to take place in public parks, encouraging people to be involved in them. Along these lines, two participants shared the following thoughts: "[…] the probability is more for me to use them [headphones] in the winter. A lot more than during the summer. Because I feel like there's a lot more going on in the summer, where I like to listen to ambient noise or street music, or birds chirping" and "I will probably wear my headphones more in the winter just because I'm more sociable and far more extroverted and up for talking to strangers in the summer. In the winter and fall, I'm a little more recluse, so I wear my headphones way more." The overwhelming nature of *workloads*, be it for students or for those employed, tend to fluctuate during different times of the year, excessively increasing during certain times and falling during others. Headphone use has found to increase during times that people's workloads were higher compared to times when they were not. One respondent who was a student, shared their thoughts as follows: "I feel like I use it [headphones] more in the spring because the spring semester, I'm overwhelmed with school and work. And because there's school and work and it's beautiful out, it's harder for me to focus on my own personal thoughts, so my music helps me drive my thoughts together. And that's why I feel like I do it more in the spring."

Given the circumstances under which this dissertation was carried out, i.e., the COVID-19 global pandemic, the researcher was curious to find out if and how these circumstances may have changed people's use of headphones in public parks. The results from the online surveys reveal that a majority of respondents reported that these new circumstances have not changed their use of headphones in parks (Table 7.8). Some

respondents were unsure if any differences persisted, and some others reported that their use of headphones had indeed changed during the pandemic (see Table 7.8).

Table 7.8 Changes to Headphone Use in Parks during COVID-19

Whether the Use of Headphones Changed During COVID-19	Number of Respondents and Percentages
Yes	22 (19%)
No	68 (60%)
I don't know	24 (21%)
Total Respondents	114 (100%)

Note: Number of respondents in response to the questions "Do you think your current use of headphones in parks has changed during the COVID-19 pandemic?" from 134 online survey responses.

Based on online survey responses, changes in the use of headphones during the COVID-19 pandemic are three-fold. The first change has to do with the *frequency of use and duration of use* of headphones. Respondents have reported that the frequency of use during the pandemic has been much lower compared to pre-pandemic times. "I have been using headphones less in order to be more present when I am at a park" said one respondent in this regard. However, whenever headphones are used, the duration of use was reported to be prolonged compared to pre-pandemic times. "People are more likely to use parks for solitary activities, and probably the duration of headphone usage would go up in parks for that reason" said another respondent. The second change regarding headphone use has to do with the *purposes that people use headphones*. In addition to the reasons why people use headphones in parks during pre-pandemic times (as discussed earlier in this chapter), the findings reveal a brand-new reason why people choose to use headphones during the pandemic. This is to reduce exposure to the Coronavirus. People reduce exposure in two ways, one, by covering their ears ("to cover every possible hole! Headphones allow me to cover my ears!"), even though the virus does not transmit through the ear canal, and second,

to as a social cue to practice social distancing so that they are unlikely to be approached by strangers ("so that no one approaches you so you can be socially distant"). The third change has to do with the *audio content* that respondents choose to play. "I've switched to meditative music rather than songs" said one this respondent. While the reasoning for such a change was not disclosed, several assumptions could be made in this regard: respondents do not wish to listen to the audio, therefore, choose to play audio that has no listening-content; and the pandemic has taken a toll on people's minds, as a result, they would rather play audio that is calming and meditative than audio that is entertaining and informative.

In the three selected parks, it appears that for a majority of respondents, the COVID-19 pandemic has not brought about any changes in headphone use. This was reported by 75% (n = 32) of the respondents in Washington Square Park, by 94% (n = 18) of the respondents in Tompkins Square Park, and by 63% (n = 16) of the respondents in Madison Square Park, as evident in Table 7.9. In addition, in Washington Square Park, 13% (n = 32) of the respondents who took the on-site survey admitted that COVID-19 has brought about some changes to their use of headphone while an equal 13% (n = 32) remained oblivious towards any changes in use. Some of the changes in headphone use that were reported in Washington Square include an increase in awareness of the surrounding or being more 'present' ("I turn my audio off more frequently to be more present") and an increase in the duration that headphones are used ("usually once I put on headphones during COVID, I don't take them off because I don't want to put my hands near my face!").

Table 7.9 Whether People's Use of Headphones in Washington, Tompkins, and Madison Square Parks Have Changed During COVID-19

Change in Headphone Use?	Washington Square Park	Tompkins Square Park	Madison Square Park
	Number of Respondents and Percentages		
Yes	4 (13%)	1 (6%)	4 (25%)
No	24 (75%)	17 (94%)	10 (63%)
I'm not sure	4 (13%)	-	2 (13%)
Total respondents	32 (100%)	18 (100%)	16 (100%)

Note: Number of respondents in response to the question "Do you think your current use of headphones in parks has change during the COVID-19 pandemic? If yes, how has your use of headphones in public parks changed?" from 32, 19, and 17 on-site surveys conducted in Washington, Tompkins, and Madison Square Parks.

In Tompkins Square Park, only one respondent out of a total of 18 that took the survey indicated that their use of headphones has changed during the pandemic (see Table 7.9). However, this respondent failed to elaborate how their use has changed. In Madison Square Park however, 25% (n = 16) of the respondents admitted to changed headphone use while 13% (n = 16) remained oblivious to any changes. Those who admitted to changed use reported that the two changes were an increase in the duration that headphones were used ("I keep them in more often and for longer to avoid interaction") and a decrease in the level of comfort while using headphones, the latter brought about by what the researcher refers to as 'ear-crowding' especially due to the mask usage ("it's harder to comfortably wear headphones with a mask").

7.2 When Headphone Use Begins and Ends

Understanding when people begin using headphones includes an understanding of the different *places* in the physical environment that people begin using headphones. When a decision to visit a park has been made, people often begin using headphones at one of four

different physical locations, according to the interview responses (see Table 6.2). People's houses are the most common place for people to begin using headphones when the decision to visit a park has been made. "I usually put my headphones as I'm leaving the apartment. And I walk to the park […] I already have them on as I get to the park" said one respondent. The *premises of the park* is another place where people begin using headphones. Another group of respondents begin using headphones as they alight from their *personal vehicles* upon arriving at the park. A respondent explained the reason behind doing so: "I would put my headphones on after I get out of the car […]. I don't wear them when leaving home because when I'm leaving the house I talk to me family or they talk to me in the car, or we have music in the car […]." *Transit spaces* are another place that respondents begin using headphones. One respondent who does so stated the following: "I'm usually wearing them as I get to the park. As soon as I get to the PATH station, I put them on and keep them on." Additionally, some people begin using headphones just as they enter parks and some others do so after they have spent a couple of minutes in the park.

Table 7.10 Places Where People Begin Using Headphones When Visiting Parks

Places People Begin Using Headphones	Frequency of Responses and Percentages
Home	15 (52%)
Public parks	7 (24%)
Personal vehicles	6 (21%)
Public transit	1 (3%)
Total responses	29 (100%)

Note: Frequency of responses to the question "When you go to a park, when do you put your headphones on and why?" from 32 in-depth interviews.

Though people often begin using headphones when visiting parks at one of the four aforementioned places (see Table 6.2), people's decisions regarding when to begin using them are not always consistent. For instance, a person who has indicated to begin using

headphones as they leave their houses does not always do so every time they go to a park. This decision was found to be influenced by the mode of transportation people take to get to the park: whether people choose to walk, drive, or ride public transit to get to a park. Several respondents elaborated on this as follows: “well, if I'm driving, I don’t put them on until I get out of the car. But if I’m walking from the park to my house, it's not even a 5-minute walk, so headphones go on pretty much as soon as I leave the house.” Another respondent stated: “if I am going by a public transport like a metro or a bus, I put them on while leaving the house. If I don't use public transport and go in my own vehicle, then I put my headphones on as soon as I enter the park. I don’t wear them while driving.” A final respondent stated: ‘I'm usually wearing headphone as I get to the park. As soon as I get to the PATH station I put them on and keep them on. But if it's a park that I've driven to, then as soon as I get out of the vehicle, I will go and find a spot in the park and then I will put my headphones on.”

Even within these three modes of transportation people take to get to parks, there is a variety in responses regarding the places where headphone use begins (see Table 7.11). For instance, those respondents who always walk to parks, most frequently begin using headphones as they leave their houses. This was followed in frequency by people who do so upon entering the park premises. Among those respondents who always drive to public parks, respondents most frequently begin using headphones right as they alight from their vehicles. Among those riding public transit to get to a park, respondents most frequently claim to begin using headphones as they leave their houses. This is followed in frequency by those who do so at the train station or bus halt as they wait for their ride.

Table 7.11 Places Where People Begin Using Headphones When Visiting Parks by Mode of Travel

Places People Begin Using Headphones	Frequency of Responses and Percentages
If driving:	
Alight personal vehicles	6 (86%)
Leaving home	1 (14%)
Total responses	7 (100%)
If walking:	
Leaving home	2 (67%)
Entering park premises	1 (33%)
Total responses	3 (100%)
If riding public transit:	
Leaving home	2 (67%)
Transit station/stop	1 (33%)
Total responses	3 (100%)

Note: Frequency of responses to the question "When you go to a park, when do you put your headphones on and why?" from 32 in-depth interviews.

Physical location is not the only determinant of when a person begins using headphones. People begin using headphones as they begin to engage in the *activities* they came to the park for: "I begin using headphones as soon as I get to the park and am about to start the intended reason why I am there," one respondent said. Depending on the purposes people visit parks for (which have already been discussed previously in this chapter), the places at which people begin using headphones differ: "sometimes, if the park is my sole destination, I will wait until I get there to put on my headphones. If the park is the space I go for walking or to get exercise, then I'll put on the headphones while I'm on the way to the park. I guess it's probably because my purpose of exercising begins the moment I leave my house. If my purpose is for relaxation, I'll stroll along and then eventually get to my destination, which is the park and from there I might decide to listen

to something while I'm sitting there, that kind of thing," one respondent stated. For a number of people who visit parks primarily for purposes of relaxing, the use of after finding a suitable place to sit down is when they begin using headphones - "when I get a spot to sit and relax as usual, I observe the environment, make sure it's safe, and I put on my headphones so that I can listen."

Understanding why people begin to use headphones particularly at these aforementioned instances – at various places and while engaging in activities – could be achieved in terms of six factors. First is people's need to have an uninterrupted or *seamless listening* experience while they move from one place to another. This means that when people decide to go to parks, they begin using headphones as they leave their houses or alight from their vehicles so that the audio that was being played in these spaces could be 'taken' with them as they move from their houses to parks and whatever other intermediary spaces they may occupy during their journey. Headphones in this instance serves as a type of 'bridge' that allows people to move among different physical environments and public sound environments while still being immersed in the same PSE. The following respondents elaborated on this: "I put my headphones of probably right as I get out of the car. Usually, I have my phone playing music in the car through Bluetooth, so when I get to the park I usually have the headphones around my neck and pull them up in the ear. And as soon as I turn the car off they go right in. I continue listening, with no interruption really"; and "I don't go to a park and put my headphones. I probably have them on when I'm walking there. The minute I turn the car off and I'm ready to go, I put them on because I'm listening to something in the car, and I put my headphones on to continue listening to it. Like I said if I'm listening to a lecture or book or something, I just continue that way."

Some people begin using headphones at particular places out or sheer practice or *habit*, or simply because they have been doing so for long periods of time. “I put my headphones on before coming into the park. After I leave my home I put them directly. I think it has become a habit for me to put them as long as I'm out of the home,” a respondent stated. People also begin using headphones at particular places for purposes of *blocking outside sounds* so that they can be fully immersed in their private audio. This typically happens when there is a significant difference between the PSE and the public sound environments of places - differences that could manifest in terms of the intensities and types of sounds. One respondent stated the following: “I put them [headphones] on as soon as I step out of my house. As soon as I step out of my house, I just want to block out everything else and listen to music.” For this respondent, there appears to be a remarkable difference in the public sound environments of their homes and what lies beyond it. The use of headphones at this point mediates these differences, cancels external sounds, and gives the opportunity to be immersed in their private audio.

Some others begin to use headphones at particular places simply because it is *convenient* to use headphones at certain times rather than to not when going to parks. A respondent explained their as follows: “I put my headphones on typically when I leave my house. Right away I put my headphones on. That’s because if I am just walking from home, since I live near a park, rather than holding my phone or putting in a bag, I'd rather just wear it and listen to my music.” The places at which the use of headphones initiates also has to do with *symbolizing the transition* from one place to another. This symbolization may well be for purposes of one’s own self, to remind themselves that they are at a different place that they were at before. One respondent describes this as follows: “if I’m at home,

usually I put my headphones in the garage. Just to give me a sense that I have now gotten out of the house and that whoever is in the house are still there, but I'm now away from them. Then I'll put headphones on and walk to the park."

Lastly, some people have reported to start using headphones when faced with *boredom*. This may take place at any place in the physical environment. For the following respondent, this takes place within parks themselves: "I put my headphones on during the last minutes of my walk in the park. Because as I step into the park I see the beauty, so I don't like to like to listen to music, I don't like to pay attention to anything else other than seeing the beauty. But after a while I get bored I with the beauty, then I put on my headphones."

In the three public parks that this dissertation investigates – Washington Square Park, Tompkins Square Park, and Madison Square Park – it is evident by the responses received from the on-site surveys, that the instances when people begin using headphones are five-fold. These instances have been elaborated in Table 7.12.

Table 7.12 When People Begin Using Headphones in Washington, Tompkins, and Madison Square Parks

When People Begin Using Headphones	Washington Square Park	Tompkins Square Park	Madison Square Park
	Number of Respondents and Percentages		
When leaving house/apartment	23 (72%)	15 (79%)	10 (59%)
If took public transit, after getting to the train/subway station	4 (13%)	-	-
If drove, after getting out of vehicle,	2 (6%)	-	-
Right before entering the park or while entering	1 (3%)	4 (21%)	4 (24%)
Other	2 (6%)	-	3 (18%)
Total respondents	32 (100%)	19 (100%)	17 (100%)

Note: Number of responses to the questions "When you decided to come here, at what point did you put your headphones on?" from 32, 19, and 17 on-site surveys conducted in Washington, Tompkins, and Madison Square Parks.

In Washington Square Park, a majority of respondents begin using headphones as they leave their places of residence (see Table 7.12). People's residences remained the most common place that respondents begin using headphones even for Tompkins Square Park and Madison Square Park. For some respondents of Washington Square Park, the decision to begin using headphones is contingent upon how they intend on getting to the park: 13% (n = 32) begin using headphones after getting to subway/train stations and 6% (n = 32), after alighting from their personal vehicles (see Table 7.12). Some respondents also begin using headphones right before or as they enter the park. This was reported by 3% (n = 32) of the Washington Square Park respondents, 21% (n = 19) of the Tompkins Square Park respondents, and 24% (n = 17) of the Madison Square Park respondents. Six percent (n = 32) of the respondents in Washington Square Park begin using headphones in other places/instances that are not aforementioned: after sitting down in the park and after leaving their place of employment. Eighteen percent (n = 17) of the respondents of Madison Square Park too begin using headphones in places/instances that are not aforementioned: after dropping off kids at school, after exiting the coffee shop, and after leaving place of employment.

7.2.1 When People Begin Playing and Listening

According to 31 interview responses (n = 31), headphones users in parks most frequently, begin playing audio immediately following their decision to use headphones (see Table 7.13). In other words, these respondents begin playing audio *immediately after first putting headphones on*. In addition, three other instances in which headphone users begin playing audio were recorded based on the interview responses, which are depicted in Table 7.13. Some respondents begin playing audio *shortly after entering parks*. More precisely, they

do so either after settling themselves down in the park, be it on a bench or on the lawn; or after spending a couple of minutes surveilling their surroundings. Another group of respondents reported to begin playing audio *right before commencing their intended activities,* for instance, "just before I start running", "when I'm about to start a hike", and "when I find a trail I want to follow", as several respondents stated. A final group of respondents begin playing audio *shortly after putting their headphones on, but before they enter the park*. Typically, this takes place at one of two locations: their homes – "I usually put them on in the apartment and turn it on once I get outside of the apartment. So, there's a little bit of a delay. And that is because I want to talk to the doorman, and I like greet people on the way", and their private vehicles. Though there appears to be a trend for respondents to begin playing audio after wearing headphones, small number of respondents was found to begin playing audio before they even wear their headphones, however, when these respondents begin to play audio remains unclear.

Table 7.13 When People Begin Playing Audio When Visiting Parks

When People Begin Playing Audio	Frequency of Responses and Percentages
Immediately after putting headphones on	14 (45%)
Shortly after entering a park	7 (23%)
Right before engaging in activities	6 (19%)
Shortly after putting headphones on but before entering park	3 (10%)
Other	1 (3%)
Total responses	31 (100%)

Note: Frequency of responses to the question "When you go to a park, when do you turn the audio on?" from 32 in-depth interviews.

Five instances that people turn on the audio on headphones across Washington Square Park, Tompkins Square Park, and Madison Square Park were identified from the on-site surveys conducted (see Table 7.14).

Table 7.14 When People Being Playing Audio in Washington, Tompkins, and Madison Square Parks

When People Being Playing Audio	Washington Square Park	Tompkins Square Park	Madison Square Park
	Number of Respondents and Percentages		
Almost immediately after putting headphones on	22 (69%)	14 (74%)	13 (76%)
Shortly after putting headphones on but before entering the park	7 (22%)	4 (21%)	1 (6%)
Shortly after entering the park	1 (3%)	1 (5%)	-
Did not turn the audio on at all	1 (3%)	-	2 (12%)
Right before engaging in activities that (I) came to the park for	-	-	1 (6%)
Other	1 (3%)	-	-
Total respondents	32 (100%)	19 (100%)	17 (100%)

Note: Number of respondents to the questions "When you decided to come here, when did you first turn the audio on?" from 32, 19, and 17 on-site surveys conducted in Washington, Tompkins, and Madison Square Parks.

In Washington Square Park, a majority of the respondents begin playing audio immediately after putting their headphones on (see Table 7.14). This remains the same across Tompkins and Madison Square Parks where respectively 74% (n = 19) and 76% (n = 17) of the respondents being playing audio after putting headphones on. In particular, beginning to play audio right before pursuing the task that respondents intended to engage in in the park was reported only at Madison Square Park by 6% (n = 17) of the respondents. In Washington Square Park, one respondent admitted beginning to play audio even before they put on headphones. This is listed under "other" in Table 7.14.

Headphones users in parks have stated to begin listening to audio immediately after playing them. This was reported at a frequency of 72% based on 29 interview responses (n = 29). Further, at a frequency of 7% (n = 29) respondents admitted to not beginning to listen immediately but at a subsequent point in time. A group of respondents also reported that their decision to listen depended on a variety of factors, which was reported at a

frequency of 21% (n = 21). One respondent whose decision to listen varies stated that this decision depends on the level of distraction their surrounding presents: “if I'm walking, I'll be listening to it but let's say if I get distracted by something in my surrounding, I don't generally pay attention.” For some other respondents, the decision whether to pay attention immediately after the audio comes on or not depends on the type of audio they choose to play. For instance, “[…] if it's music I don’t generally pay attention to what I'm playing” and “if it's instructions for my exercises then yes, I pay attention immediately after playing. Otherwise, no. I doesn't matter what it is about, […] I don't care about the content”, two respondents stated. For a different group of respondents, the immediacy of listening to audio is contingent upon finding an audio they truly enjoy – “I skip around, sometimes excessively until a song strikes me in the right way and then I start listening” said one respondent.

In Washington Square Park, Tompkins Square Park, and Madison Square Park, the majority of respondents begin paying attention to the audio, i.e., listening, immediately after turning the audio on. This was reported by 63% of the respondents based on a total of 32 that were surveyed (n = 32) at Washington Square Park, 58% (n = 19) of the respondents at Tompkins Square Park, and 71% (n = 17) of the respondents at Madison Square Park (see Table 7.15). A noteworthy finding is that 12% (n = 17) of the respondents in Madison Square Park begin listening to audio only after beginning to pursue the activity they came to the park in pursuit of. This was reported only at Madison Square Park. Also, 6% (n = 32) of the Washington Square Park respondents stated that they never pay attention to the audio when in the park – a finding reported only at Washington Square Park. Interestingly,

one respondent (6%, n = 17) from Madison Square Park admitted that they never turn the audio on when in the park.

Table 7.15 When People Being Listening to Audio in Washington, Tompkins, and Madison Square Parks

When People Being Listening to Audio	Washington Square Park	Tompkins Square Park	Madison Square Park
	Number of Respondents and Percentages		
Immediately after turning on the audio	20 (63%)	11 (58%)	12 (71%)
Shortly after turning the audio on	10 (31%)	8 (42%)	2 (12%)
Only when engaging in activities that (I) came to the park for	-	-	2 (12%)
Never pay attention to the audio	2 (6%)	-	-
Other	-	-	1 (6%)
Total respondents	32 (100%)	19 (100%)	17 (100%)

Note: Number of respondents to the questions "When you decided to come here and began playing audio on your headphones, when would you say you began paying attention to the audio that is playing?" from 32, 19, and 17 on-site surveys conducted in Washington, Tompkins, and Madison Square Parks.

7.2.2 When People Discontinue Headphone Use

Similar to the manner in which PSEs are created – by playing audio on one's headphones or by just wearing headphones without any audio playing – the deconstruction of PSEs too can be identified by the complete removal of headphones from one's ears, which respondents have reported to do at a frequency of 56%, based on 43 interview responses (n = 43), or by modifying the audio playing on headphones, typically by stopping, pausing, or reducing the volume, which was reported at a frequency of 44% (n = 43). Several reasons that explain why people remove headphones and/or decide to stop, pause, or reduce audio typically take place were identified from the focus group and interview responses (see Table 7.16).

Table 7.16 Reasons for Deconstructing PSEs When in Public Parks

Type of Reasons	Removal of Headphones	Modification of Audio
Occurrence of social interaction	13 (35%)	14 (32%)
Ability to better pay attention	9 (24%)	13 (30%)
Relieve users' ears	5 (14%)	1 (2%)
Being in the moment	4 (11%)	9 (20%)
Technological shortcomings	1 (3%)	1 (2%)
Pursuing active recreational activities	3 (8%)	-
Congruity of mood and the public sound environment	1 (3%)	-
Departure from the park	1 (3%)	-
Aggravation of hearing-related disorders	-	1 (2%)
Audio too loud	-	5 (11%)
Total responses	37 (100%)	44 (100%)

Note: Frequency of responses to the questions "Do you ever take your headphones of when you are in a public park? Can you tell me why?" and "Do you sometimes stop, pause, or reduce the volume of the audio playing while you still have your headphones on when you are in a public park? Can you tell me why?" from 32 in-depth interviews.

The first reason is that the occurrence of *social interactions*, both wanted and unwanted, the latter typically prompted by the approaching of strangers for a multitude of reasons including asking for directions, asking for the time, product/service promotions, being greeted, or just being talked to is what encourages people to remove headphones altogether or modify their audio. In this case, 'wanted' social interactions refer to occasions that a person is already with or is anticipating the arrival of a friend or a family member that would prompt a social interaction that is anticipated and welcome.

Another reason is that people's *ability to pay attention* increases when headphones are taken off or when the audio is modified. Respondents have stated to be "not distracted," found themselves to be "more focused," better "able to think", either on a task at hand, such as reading a book or responding to an email or text message – "if I feel like I need to

focus on something maybe like if I decide to read something in the park. Then I would take them out", or of the happenings of their surroundings – "if there are not a whole lot of people around and I can see that something happening that I can't really hear, I'll take them off to listen to it" said one respondent and "if it's too silent, I would turn it [audio] down in order to not be extremely vulnerable or completely unaware of what's happening around me."

Taking off headphones or modifying the audio also *relieves users' ears*. Be it ear fatigue caused by extended period of listening, pressure built on the ears caused by the earpieces, or even perspiration in the ear caused by warm weather conditions, removing headphones or modifying the audio have reported to be effective.

Wanting to be in the moment when in a park is another reason why people remove headphones or modify their audio. This refers to being in the 'present' so that so that the park could be experienced and enjoyed better, especially, the bands that are playing, the entertainers performing, pleasant weather, the flora and fauna among others. Not only do removal or modification append people experiences, but they also enable people to be able to 'sense' their surroundings, particularly, to know what is happening around them, to sonically gauge how crowded a park might be, the types of people in the vicinity, or even to understand how safe or unsafe they may be.

Technological shortcomings is another rather obvious reason why people remove headphones or adjust their audio. More often than not, such removal or modification has been found to take place when the battery levels reach low, either on headphones (if wireless) or on devices that curate the audio, which are typically mobile phones.

Pursuing active recreational activities in parks is another reason why people take headphones off. This includes playing organized sports, working out, doing various kinds of exercises, playing with dogs and any other activity that involves the movement that is be physically exacting. The reason behind removing headphones when pursuing such active recreational activities is that they often 'get in the way' – "if I'm going to play sports with other people, I'll take them [headphones] off. Or if I'm running around and playing with my dogs actively, I'll take them off 'cause then they are not going to get tangled or lodged or anything like that."

Congruity between people's moods and the public sound environment influences whether headphones stay on or be removed. For instance, a respondent stated that "if the sounds I'm hearing around go with my mood or where I am, then I don't go for headphones." Another reason why users remove their headphones is their *departure from the park*. Departure does not simply refer to physically leaving a park, but also to symbolically leaving a park and entering a different kind of space.

A reason that exclusively explains why people modify their audio by stopping, pausing, or reducing the volume when in parks is when the volume of the *audio is too loud* than it needs to be. Second is the *aggravation of hearing-related disorders* that people could possibly be suffering from is the final reason why people in parks modify their audio. A respondent explained this as follows: "I have hearing loss and tinnitus from military service. If my tinnitus starts acting up and I get that high-pitched ringing, I'll reduce the volume. Or if it gets bad enough, then I'll have to take my headphones out. And it's completely random and nonsensical when it occurs. There's no correlation between the volume and the tinnitus or anything like that."

A majority of respondents across all three parks - 59% (n = 32) in Washington Square Park, 89% (n = 19) in Tompkins Square Park, and 69% (n = 17) in Madison Square Park - have indicated to turn off the audio when departing from the parks by way of turning off the audio upon reaching their destinations (see Table 7.17). In most instances, these destinations are people's place of residence and in rare instances, people's places of employment. One respondent in each of the three parks has indicated to turn off the audio either when the audio comes to an end or when their devices are devoid of battery power. In addition, 6% (n = 32) of the respondents in Washington Square Park have indicated to turn the audio off shortly after departing from the park, and 13% (n = 16) of the respondents in Madison Square Park turn their audio off even before departing the park – both findings unique to the two corresponding parks.

Table 7.17 Instances When People Turn Off Audio in Washington, Tompkins, and Madison Square Parks

When People Turn Off Audio	Washington Square Park	Tompkins Square Park	Madison Square Park
	Number of Respondents and Percentages		
At the destination	19 (59%)	17 (89%)	11 (69%)
Never	9 (28%)	1 (5%)	2 (13%)
When audio ends	1 (3%)	1 (5%)	1 (6%)
After leaving the park	2 (6%)	-	-
Before leaving the park	-	-	2 (13%)
Total respondents	32 (100%)	19 (100%)	16 (100%)

Note: Number of respondents in response to the question "When you decide that you want to leave this park, when do you turn the audio off?" from 32, 19, and 17 on-site surveys conducted in Washington, Tompkins, and Madison Square Parks.

Instances when people remove their headphones when they depart from the three parks are shown in Table 7.18. The majority of respondents across all three parks remove their headphones as they depart from the parks upon reaching their destinations, which are

typically people's places of residence or their places of work. This was reported by 67% (n = 32) of the respondents in Washington Square Park, 95% (n = 19) of the respondents in Tompkins Square Park, and 69% (n = 16) of the respondents in Madison Square Park (see Table 7.18).

Table 7.18 Instances People Take Headphones Off in Washington, Tompkins, and Madison Square Parks

When People Take Off Headphones	Washington Square Park	Tompkins Square Park	Madison Square Park
	Number of Respondents and Percentages		
At the destination	22 (67%)	18 (95%)	11 (69%)
Never	5 (15%)	1 (5%)	1 (6%)
When audio ends	4 (12%)	-	1 (6%)
After leaving the park	2 (6%)	-	-
Before leaving the park	-	-	3 (19%)
Total respondents	32 (100%)	19 (100%)	16 (100%)

Note: Number of respondents in response to the questions "When you decide that you want to leave this park, when do you take your headphones off?" from 32, 19, and 17 on-site surveys conducted in Washington, Tompkins, and Madison Square Parks.

7.3 Types of Audio Played

The types of audio that people play on headphones in parks are seven-fold, based on focus group and interview responses (see Table 7.19). Not surprisingly, the type of audio that is most frequently played is *music*. *Soundtracks* containing recorded natural sounds, such as bird song and sounds of water flowing among such others is another type of audio that two focus group respondents reported play on their headphones (this figure, and only this figure under this subtitle is based on 16 responses received from focus groups. This is because this particular type of audio was reported only in focus groups and not in the interviews and the researcher deemed it important to include this rather uncommon type of audio).

One of the two focus group respondents who admitted to playing such natural soundtracks in parks explained their choice as follows: “if I’m in a park for a long enough time doing some of my writing, I don’t usually prefer something with lyrics. I would just listen to sounds like a small river flowing by or birds chirping, or specially if you can go on Spotify, you can get a lot of things like nature tracks, something that ideally my brain thinks should be the background noise for where I physically am.” *Podcasts, audiobooks*, *videos* including all visual-enabled content, and audio with *informational content* such as recorded lectures and books readings among others are also frequently played in parks. The final type of audio is *phone calls*. While respondents admitted to making or answering phone calls on headphones in parks at a frequently of 95%, based on 22 interview responses to the question “How about phone calls? Do you make or answer phone calls on headphones when in parks?”, they reported to do so either unwillingly, or conditionally. One respondent who unwillingly answers phone calls in parks explained their feelings as follows: “if it rings, I'll be very annoyed, but I'll answer it. It's not something I can listen to. It ruins my experience. I really don't like those phone calls.” Two other respondents stated to answer or make phone calls on a conditional basis, often depending on who the caller is: “if I want to share something with someone, that someone is mostly my boyfriend, I will answer a phone call. Otherwise, no. I think I just want to stay away from that interaction, that's why I don’t want to answer” and “except if I'm talking to my wife, otherwise my phone will be on ‘do not disturb’ mode when I’m in a park. Her number is the only number that can ring even then.” Respondents admitted to not answer phone calls in public parks on their headphones only at a frequency of 5% (n = 22).

Table 7.19 Types of Audio Played on Headphones in Parks

Types of Audio	Number of Responses and Percentages
Music	28 (48%)
Podcasts	13 (22%)
Phone calls	7 (12%)
Audiobooks	5 (9%)
Videos	4 (7%)
Informational content	1 (2%)
Total responses	58 (100%)

Note: Number of responses to the question "What do you listen to on your headphones?" from 32 in-depth interviews.

The most frequently played type of audio across all three parks is music or audio with lyrics. As depicted in Table 7.20, in Washington Square Park, this was reported at a frequency of 54% (n = 54), In Tompkins Square Park at 33% (n = 40), and in Madison Square Park at 39% (n = 31). Videos include movies, TV shows, and all other video-enabled content, which were reported at frequencies of 9% (n = 54%), 10% (n = 40), and 16% (n = 31) across the three parks respectively. Soundtracks with natural sounds include the sound of flowing water, birds chirping, wind blowing among others and was reported at frequencies of 4% (n = 54) and 13% (n = 40) only in Washington and Tompkins Square Parks. One respondent each in Washington Square Park (2%, n = 54) and Madison Square Park (3%, n = 31) reported to not play any audio at all on their headphones indicating that they just wear headphones in silence. The "other" category of audio includes Zoom calls and was reported at frequencies of 5% (n = 40) and 3% (n = 31) only at Tompkins and Madison Square Parks. Table 7.20 outlines the types of audio against the three public parks in great detail.

Table 7.20 Types of Audio Played on Headphones in Washington, Tompkins, and Madison Square Parks

Types of Audio	Washington Square Park	Tompkins Square Park	Madison Square Park
	Number of Respondents and Percentages		
Music/audio with lyrics	29 (54%)	13 (33%)	12 (39%)
Podcasts	8 (15%)	10 (25%)	10 (32%)
Instrumental music/audio	6 (11%)	5 (13%)	2 (6%)
Videos	5 (9%)	4 (10%)	5 (16%)
Audiobooks	3 (6%)	3 (8%)	-
Soundtracks with natural sounds	2 (4%)	3 (8%)	-
I don't play any audio	1 (2%)	-	1 (3%)
Other	-	2 (5%)	1 (3%)
Total responses	54 (100%)	40 (100%)	31 (100%)

Note: Frequency of responses to the questions "What kind of audio do you play on your headphones when you are here?" from 32, 19, and 17 on-site surveys conducted in Washington, Tompkins, and Madison Square Parks.

Having previously identified the seven types of audio that people play on their headphones when in parks in general, the next most pressing question is to understand whether people always play the same types of audio in parks. A glance at the focus group and interview data reveals the answer - that people do not always play the same type of audio in parks. Not only were there variations between different types of audio, there also were variations between different genres within the same type of audio. Upon comprehensively investigating the responses, 12 factors that contribute to the differential choice of audio were discovered.

The most recurringly reported factor is people's *moods* or what people are *feeling* at a given moment in time. People reported to play audio that complement their moods or feelings at a given time. For instance, one respondent's choice of audio varied depending on how good or bad their mood was: "what I play, I guess, depends on my mood. If I'm in

a really good mood, I'll listen to music. If I want to hear people talk about stuff, have discussions, I'll turn on the podcasts and see what they are talking about." For the following respondents, the choice of audio varied based on how energized or exhausted they felt at the time. "So, if I'm like more energetic or something, I'll play like some more upbeat music, but every now and then, instrumental music and that depends on what I'm, how I'm feeling that day." At the same time, "what I play depends on my mental state. If I'm tired, if I'm too tired, it becomes music by default. If I'm less tired, and I want to feel productive or do something, I just listen to a podcast."

Based on moods or feelings, not only does the type of audio differ, but in some instances, differences among genres within the same type of audio were reported. "The type of audio I play really just depends on the mood that I'm in. Sometimes I will only listen to one genre of music for week at a time. And sometimes I'll get what I call musical ADD where I'm just listening to like a minute of a song before I'm skipping to the next one" said one respondent. In addition, the following respondent switched between different genres of music based on their moods and feelings, while essentially remaining within the same type of audio, which is music: "if I'm energized or want to be energized I'll probably use pop music. If I'm maybe feeling relaxed or tired, I would play more softer music." Another respondent also claimed to display similar sentiments with regard to the type of audio they play in parks: "it really depends on my mood at that moment when I get to the park. If I'm feeling very high energy I would listen to music that is high energy, exciting, and vibrant. If I'm in a mood where I want to relax I might listen to something more calming like jazz. If I'm feeling nostalgic I'll listen to some of my favorite playlists including my favorite Indian songs and western songs in general. So, it's very very mood-dependent."

For the most part, people's moods or feelings influence the type of audio that will be played. However, in some instances, this reverses, encouraging people to play certain types of audio in order to feel a certain way. For instance, a respondent stated that: "if I want to feel a certain way I would listen to a certain type of music and I'll just take what I listen to from there." This means not only is the choice of audio governed by people's moods and feelings, and but also that people use audio in order to induce feelings or manipulate their moods.

The choice of audio also depends on the activities people pursue. More than the type of activity, what really influences audio choice is first, whether the activities require people to be *actively moving* around or not, and second, whether the activities themselves are *monotonous* ones or not. When engaging in activities that require people to be moving around, or be active in a general sense, people reported to play audio that is fast paced, energetic, requires little to no cognitive effort like thinking involved, and only engage people in auditory terms – this is because playing visually engaging content such as videos would get in the way of their activities. In most instances, this audio amounts to music that is fast-paced and upbeat. This is reflected in the statements made by the following respondents: "while walking, jogging, running or doing any physical activity in the park, it's mostly music. If I'm sitting, I may watch a video or something," and "the type of music I listen to depends on the activity that I'm doing. So, if I'm walking or jogging, I like more fast-paced music to keep me going. And if I'm sitting down, I might pick more slow-paced music." When engaging in monotonous activities, people choose to play audio that is more engaging and require a certain degree of cognitive effort like thinking. This is because these activities are so monotonous that almost no thought processes need to go towards them,

leaving people cognitively available. The following explained their thoughts behind this as follows: “if I’m going for a walk, I’ll listen to podcasts. It mainly has to do with if I’m doing something monotonous in the park. I’ll listen to something else like a podcast so I can think about that.” According to the same respondent, some such monotonous activities include running and walking.

The type of audio also varies based on the *purpose* people go to parks for. The following explains how people’s choice of audio varies when they visit parks for purposes of leisure and socializing: “if I go to the park to read a book or relax, then I would listen to calm music to help me with that particular intention. But there could be situations that I listen to regular music. For instance, if I'm waiting for someone or if I had my headphones beforehand before I entered the park, then most of the time it would be music playing.” The latter part of the same respondent’s response also indicates another factor that seems to affect their audio choice – the type of audio that they were *listening to previously*. People sometimes choose to continue to listen to what they were listening to previously when in parks as opposed to deciding what to listen to after getting to the park. “Well, if I was listening to a book prior to the trip to the park that I'm taking, I'm like, oh, I have got to finish that book.’ So, I listen to the book then. But if not, I’ll listen to music. I'll listen to something that I felt like listening to today, I'll go with that the whole day. I’ll probably not listen to anything else the whole time” explained a respondent in this regard.

The degree to which parks are *crowded* also affects audio choice. People have reported to play certain types of audio particularly when parks are congested as opposed to when they are not. This choice is also correlated with the need people have to cancel or reduce noise, as a high level of people in parks translates to high levels of noise. One

respondent stated the following: “if there are lot of people in the park, then I normally play pop music. It gives a certain vibration to my ear, so I don’t have to listen to what people are saying around me. If there are not a lot of people, then soft music would be good.”

The degree of *concentration* people are willing to or able to expend on their audio also influences the type of audio. For instance, when people are willing to or are able to invest a significant amount of mental energy, people play audio with substance. This is because such audio require a certain level of cognitive thinking and concentration. A respondent described this as follows: “[…] if I feel like I have a lot of focus and energy, I might listen to a podcast or something because I can tune into that. But if I'm just trying to mindlessly relax, I'll probably listen to music, because I won't be able to focus on anything with a substance.” Another respondent explained their thoughts as follows: “I think it depends on my mindset. If it is a day in which I feel the need to be productive or informative, then I listen to a podcast that might give me some new insights. But there are some days that I literally just want to relax. Music has different functions at least for me. […] It's [music] a form of dreaming place or relaxation.”

The choice of audio also varies based on people’s *availability of time*. Often, there is a tendency for people to listen to audio that is longer, more engaging, and informative when they have ample time at their disposal, compared to when they do not. This is evident in the statement made by the following respondent: “if I have a lot of time, then sometimes I listen to podcasts. But it happens rarely, because I’m always in a rush. Music is what happens mostly. Whatever the playlist I have, I just play.”

People decide to play certain types of audio for *variation*. This means that people switch between different types of audio simply ‘for a change’ or to invigorate their listening

experience. “If I'm bored of the same music that I've been listening to, then I might switch it off and listen to a podcast. And if I'm bored with a podcast that I've been listening to or if the episode is not that great, I might switch back to music” said a respondent.

The *time of day and day of week* are also contributors to people’s audio choices in parks. This is apparent in the following statement of a respondent: “it depends, let's say if it's around 4.30pm and I want to listen to what happened to the market, on Wall Street, so maybe I will listen to a podcast on that. Maybe if I’m going in the morning or a weekend where the market is not opened, I will listen to music. So, it depends on the day as well.”

Lastly, the availability of *phone signals* or internet data determines which types of audio people could play on their headphones in parks. More often than not, people tend to play audio such as music, that exhausts little to no amount of internet data. However, in instances people feel generous, they are often encouraged to watch videos and other forms of video-enabled audio content, such as the following respondent does: “I usually play podcasts, music on Spotify, and sometimes if want to spend data, it would be a YouTube video. It’s my main form of procrastination.”

Audio that is played on headphones is not always listened to. In fact, the results of 114 web surveys (n = 114) reveal that 5% of the respondents almost never pay attention to the audio when in parks (see Table 7.21).

Table 7.21 People's Listening Behaviors in Parks

People's Listening Behaviors	Number of Responses and Percentages
Always pay attention to the audio that is playing	15 (13%)
Sometimes pay attention to the audio and occasionally zone out	92 (81%)
Almost never pay attention to the audio	6 (5%)
I don't play any audio	1 (1%)
Total respondents	114 (100%)

Note: Number of responses to the question "When you are in a public park and you have audio playing on your headphones, do you: Always pay attention to the audio that is playing, Sometimes pay attention to the audio and occasionally zone out, Almost never pay attention to the audio, Don't play any audio?" from 134 online surveys.

Several reasons why people almost never pay attention to the audio have been recorded based on focus groups responses. One reason is when people play audio *without the intent of listening* to it. In such instances, audio is typically played to serve purposes of cancelling or reducing ambient noise, largely to enable concentration on an engagement the user undertakes – "I don't really listen to music because the music is kind of a way to block everything out, so I can easily focus on what's in my own head"; and providing background noise that is "buzzing in the background." *Zoning out* is another reason why people may not be listening to the audio. People's minds often tend to drift away resulting in them zoning out and consequently, forgetting to pay attention to the audio. For instance, a respondent stated: "I zone out and forget the music is playing, and then a little bit later think 'oh wait, the music is playing,' and kind of just come back to it" when jogging in parks. The final reason for not listening to the audio is because people *may be distracted* by various circumstances. When distracted for whatever reasons, respondents claimed to have found themselves not paying attention to the audio playing on their headphones.

7.4 Activities People Pursue

Activities people pursue in parks are of eight types, based on focus group and interview responses (see Table 7.22). People have reported to use headphones while engaging in these activities, be it to play audio or to just wear them.

Table 7.22 Activities People Pursue While Using Headphones in Parks

Type of Activity	**Frequency of Responses and Percentages**	**Frequency of Responses and Percentages**	
Relaxing and unwinding	29 (35%)	Being seated	8 (28%)
		Leisure activities	4 (14%)
		Laying down	3 (10%)
		Getting fresh air	3 (10%)
		Enjoying nature	3 (10%)
		Consuming food/drinks	2 (7%)
		Miscellaneous	6 (21%)
		Total responses	29 (100%)
Fitness and physical activities	28 (34%)	Exercising	11 (39%)
		Running	8 (29%)
		Jogging	7 (25%)
		Organized sports	2 (7%)
		Total responses	28 (100%)
Walking	9 (11%)	Walking	8 (89%)
		Walking dogs	1 (11%)
		Total responses	9 (100%)
Activities that require thought and concentration	5 (6%)	Reading	4 (80%)
		Employment-related activities	1 (20%)
		Total responses	5 (100%)
Observing	6 (7%)		
Recreational activities	3 (4%)		
Eating / drinking	2 (2%)		
Total responses	82 (100%)		

Note: Frequency of responses to the question "When you are in a park with your headphones on, what sort of activities do you do?" from 32 in-depth interviews

Relaxing and unwinding is the most frequently engaged in activity in public parks (see Table 7.22). Relaxing and unwinding entail a multitude of sub-activities (Table 7.22). The most common is relaxing while *being seated*, be it on benches, chairs, park lawns, or other seating apparatuses. Relaxing while *laying down* is taken up at a frequency of 10% (n = 29), and this includes laying on lawns or even on hammocks. Respondents also reported to visit parks for the purpose of *getting fresh air*. Another group of respondents stated to *enjoy the nature*, the weather, and listen to the pleasant and natural sounds such as bird song that public parks present. Engaging in various *leisure activities* such as playing games on mobile devices, meditating, and taking pictures are a few other relaxation and unwinding activities that are pursued at a frequency of 14% (n = 29), and *consuming food and drinks*, at a frequency of 7% (n = 29). Lastly, respondents reported to engage in miscellaneous relaxing activities. These remain unspecified yet are distinct from those aforementioned.

Fitness and physical activities are the second most frequently engaged in activities in public parks (see Table 7.22). A variety of physical activities have been reported among which exercising, doing stretches, and working out appear to be the most common. Running is the second most frequent physical activity closely followed by jogging. Playing organized sports like basketball and football is the least frequently pursued physical activity in parks according to the respondents.

Walking is taken up by of park users at a frequency of 11% (n = 82), as shown in Table 7.22. Not only does this including simply walking around in public parks, which people claimed to do at a frequency of 89% (n = 9), but it also includes other walking-related activities, particularly, walking dogs (11%, n = 9).

Activities that require thought and concentration are engaged in by 6% of the respondents (n = 82), as depicted in Table 7.22. These activities including reading, and employment-related tasks. With regard to the latter, i.e., employment-related tasks, a participant stated the following: "[…] Apart from that I sometimes go to a park to work as well. Just to get some fresh air in and work through an hour or so. When I feel tired of sitting in an office and working, I'll go to a park and sit there and work."

Observing is another activity that people carry out in public parks, though at a relatively low frequency (see Table 7.22). While some respondents have reported to just "look around", and "gaze", some others have reported to observe certain settings in particular. For instance, one respondent reported to "observe sceneries in parks", another respondent admitted to "watch other people", and a final respondent, to "do bird watching" in parks.

Recreational activities such as canoeing, kayaking, and swinging on swing sets are also some of the activities that people engage in parks. However, these activities are contingent upon the facilities that each public park offers and may not take place in every public park.

The on-site surveys conducted in the three parks revealed that respondents engage in a variety of activities while using headphones. In fact, 16 types of activities were identified (see Table 7.23). Even though people use headphones while pursuing the undermentioned activities in the three parks, it is possible that people may not be playing audio at all, or even if they were, may not be listening to it. Table 7.23 also sheds light on this matter, specifically depicting whether respondents are playing audio or not, and if playing audio, whether they are listening to it or not, while pursuing the different activities.

Table 7.23 Types of Activities People Pursue in Washington, Tompkins, and Madison Square Parks and Whether They Play Audio, Not Play Audio, Listen to the Audio, or Not Listen to the Audio While Pursuing These Activities

Activities	Washington Square Park					Tompkins Square Park					Madison Square Park				
	Playing Audio	Not Playing	Playing Audio and Listening	Playing and Not Listening	Total Responses	Playing Audio	Not Playing	Playing Audio and Listening	Playing and Not Listening	Total Responses	Playing Audio	Not Playing	Playing Audio and Listening	Playing and Not Listening	Total Responses
Reading	-	2 (33%)	1 (17%)	3 (50%)	6 (100%)	-	-	-	1 (100%)	1 (100%)	-	1 (25%)	2 (50%)	1 (25%)	4 (100%)
Playing games	-	-	1 (100%)	-	1 (100%)	-	-	-	-	-	-	-	-	-	-
Communicating	-	1 (33%)	1 (33%)	1 (33%)	3 (100%)	-	-	5 (100%)	-	5 (100%)	1 (33%)	-	-	2 (67%)	3 (100%)
Observing	1 (17%)	1 (17%)	4 (67%)	-	6 (100%)	-	-	-	-	-	-	-	2 (50%)	2 (50%)	4 (100%)
Contemplating	-	-	1 (100%)	-	1 (100%)	1 (100%)	-	-	-	1 (100%)	1 (100%)	-	-	-	1 (100%)
Using social media	-	-	2 (100%)	-	2 (100%)	-	-	4 (100%)	-	4 (100%)	1 (33%)	-	2 (67%)	-	3 (100%)
Shopping online	-	-	-	1 (100%)	1 (100%)	-	-	-	-	-	-	-	-	-	-
Meditating	-	-	-	-	-	-	-	1 (100%)	-	1 (100%)	-	-	1 (100%)	-	1 (100%)
Napping	-	-	-	1 (100%)	1 (100%)	-	-	-	-	-	-	-	-	-	-
Drawing/writing/photography	-	-	2 (67%)	1 (33%)	3 (100%)	-	-	-	-	-	-	-	-	-	-
Exercising	-	-	4 (80%)	1 (20%)	5 (100%)	-	1 (20%)	4 (80%)	-	5 (100%)	-	-	1 (100%)	-	1 (100%)
Relaxing	2 (11%)	-	14 (78%)	2 (11%)	18 (100%)	-	-	3 (75%)	1 (25%)	4 (100%)	1 (33%)	-	2 (67%)	-	3 (100%)
Consuming food/drinks	-	-	3 (100%)	-	3 (100%)	1 (14%)	-	5 (71%)	1 (14%)	7 (100%)	-	1 (50%)	1 (50%)	-	2 (100%)
Enjoying nature	1 (33%)	1 (33%)	1 (33%)	-	3 (100%)	-	-	1 (100%)	-	1 (100%)	-	-	-	1 (100%)	1 (100%)
Walking	2 (33%)	-	2 (33%)	2 (33%)	6 (100%)	-	-	3 (60%)	2 (40%)	5 (100%)	1 (20%)	-	4 (80%)	-	5 (100%)
Entertainment	-	-	1 (100%)	-	1 (100%)	-	-	3 (100%)	-	3 (100%)	-	-	4 (80%)	1 (20%)	5 (100%)

Note: Frequency of responses to the questions "What activities do you pursue in this park while you have your headphones on? And "For these activities listed above, state whether you are playing audio, merely wearing headphones and if you are playing audio, whether you are paying attention to the audio or not, while doing these activities" from 32, 19, and 17 on-site surveys conducted in Washington, Tompkins, and Madison Square Parks.

7.4.1 Effects of Activities on Other Aspects of Headphone Use

For 75% of the interview respondents, out of a total of 28 interviewed (n = 28), the choice of audio is largely dependent upon the activity they purse in parks. For instance, when engaging in fitness and physical activities, headphone users typically seek music that is upbeat, energetic, vibrant, happy, and fast paced in order to be driven and motivated; when walking - fast paced music to be driven and motivated, and podcasts, because walking is typically monotonous and often leaves ample mental energy to pay attention; when relaxing, unwinding, and observing – podcasts for the same reasons as before, in addition, instrumental, acoustic, classical music that are slow paced and somber; and when engaging in activities that require thought and concentration – sound tracks containing natural sounds, classical music, and other types of sound tracks and music that enhance concentration and focus. On the other hand, at a frequency of 25% (n = 28), respondent's choice of audio does not just depend on the activities they engage in when in parks. Rather, for these respondents, the choice of audio depends on their mood – "if I'm in the mood to learn something, or be more attentive to something, I would listen to a podcast. If I'm tired and want to relax, it becomes music or something that I need to pay less attention to"; the nature of the public sound environment, particularly, how loud or quiet it may be – "if it's a quiet environment, I would listen to something like classical music. But If I want to drown out everything in the environment, I'll go for heavy metal, screamo and things like that"; and habitual practices, such as listening to the same audio all the time regardless of any other circumstances.

It was found from the interviews that a majority of 50% of the respondents, based on a total of 28 interviewees (n = 28), actively listen to the audio more often when they are

on the move as opposed to when they are stationary in parks (see Table 7.24). One reason for this is that being on the move, for most respondents, translates to being alone and not interacting with other people. This social isolation that comes with being on the move is one reason why a majority people listen to audio then. A second reason is that the audio playing often gives people a boost, especially for those who engage in physical activities in parks, encouraging them to play audio when on the move. On the other hand, 11% (n = 28) of the respondents reported to listen to audio when they are stationary. Being stationary eliminates the incidence of certain external noises that are inherent when being on the move, such as the sound of people's own footsteps. The need to avoid such external noises and to be able to listen to the audio that is playing on headphones is one reason why people listen while being stationary. Another reason is that the audio can truly be experienced and enjoyed when people are in relaxed, and people are typically the most relaxed when they are stationary in parks. At the same time, 32% (n = 28) reported to listen to audio while being both stationary and on the move, while 7% (n = 28) were unaware of such nuanced behavior (see Table 7.24).

Table 7.24 Playing Audio vs. Being Stationary/On the Move

Whether Stationary or On the Move	Number of Respondents and Percentages
Stationary	3 (11%)
On the move	14 (50%)
Both stationary and on the move	9 (32%)
I'm not sure	2 (7%)
Total Respondents	28 (100%)

Note: Number of respondents in response to the questions "Do you listen to audio more often when you are stationary in a park or when you are on the move? Why is that?" from 32 in-depth interviews.

A majority of the respondents, i.e., 46% of the 13 interviewees (n = 13), reported to typically wear headphones without audio playing when they are stationary in parks. Similar to how the choice of audio varies as discussed above, the decision to wear headphones also has to do with the activities people engage in while they are being worn, particularly, whether the activity warrants users to be stationary or on the move. For instance, when stationary, people relax or engage in activities that require concentration. In such instances, where "peace and quiet" is sought, headphones are worn without audio. When being on the move however, only 31% (n = 13) of the respondents reported to wear headphones. One of the major reasons for this is to socialize and interact with other people who may engage with them. Eight percent (n = 13) of the respondents claimed to wear headphones while being both stationary and on the move instead of exclusively sticking to one of the mobility options, and 15% (n = 13) reported to be unaware of such nuanced behavior.

7.5 Effects on People's Experiences

People's experiences of using headphones in parks when they are playing audio, listening to the audio, and when they are not using headphones at all could be understood in terms of five elements: their mood, degree of safety, degree of enjoyment, degree of relaxation, and how close they felt to their surroundings. One hundred and eleven respondents (n = 111) rated each of these elements in the web surveys, based on a five-point Likert scale as depicted in Table 7.25. The results are depicted in Table 7.26 and Figure 7.1.

Table 7.25 Experiences and Likert Scale Values

Experience	Rating
Mood	1 = not good at all, 5 = very good
Degree of safety	1 = not safe at all, 5 = very safe
Degree of enjoyment	1 = not at all, 5 = very much
Degree of relaxation	1 = not relaxed at all, 5 = very relaxed
How close they felt to their surroundings	1 = not close at all, 5 = very close

As evident in Table 7.26 and Figure 7.1, respondents' overall experience was reported to worsen when listening to audio compared when just playing audio. The overall experience however improved when people were not using headphones at all. Further, respondents' moods appear to slightly improve by 3% based on the average ratings of 111 online survey respondents, when they were listening to audio compared to when audio was being played and no attention was paid. The mood however worsened somewhat significantly, by 12% (n = 111), as respondents stopped using headphones altogether. These numbers further confirm findings discussed previously – that one of the reasons why people use headphones is to improve their moods and feelings. The degree of safety that respondents experience in parks while listening to audio was also found to drop by 4% (n = 111), compared to instances when they play audio. This drop could be attributed to their immersion in the audio. In other words, when a person begins intently listening, they become immersed in the audio, which results in them becoming oblivious to the happenings around them. The sense of safety thus becomes compromised. The sense of safety improved somewhat significantly, by 8% (n = 111), as respondents take their headphones off completely. Similar results prevail in the degree to which respondents feel close to their surroundings when in parks. Naturally, when listening to audio, the proximity

experienced is found to reduce, by 5% (n = 111), before it drastically begins to increase, by 23% (n = 111) when respondents stop using headphones. The level of enjoyment and degree of relaxation that respondents experience in parks reduce by insignificant amounts, 1% (n = 111) and 2% (n = 111) respectively, to the point that this difference is almost negligible when respondents are playing audio and listening to the audio in parks before the ratings begin to drop by somewhat significant amounts, 10% (n = 111) and 5% (n = 111), when headphones are not used at all – another finding that compliments previous findings that explain why people use headphones.

Table 7.26 People's Experiences of Being in Parks When Playing Audio, Listening to Audio, and Not Using Headphones at All

Experience	**Play Audio**	**Listen to Audio**	**Not Use Headphones at All**
	Average rating out of 5.0 and the improvement (positive percentages) or decline (negative percentages) in experiential elements when playing audio, listening to audio, and not using headphones at all N.B. "△" depicts change		
Overall experience	3.7	3.6 (△-2%)	3.7 (△2%)
Mood	3.9	4.1 (△3%)	3.5 (△-12%)
Safety	3.7	3.5 (△-4%)	3.9 (△8%)
Enjoyment	4.0	4.0 (△-1%)	3.5 (△-10%)
Relaxed	3.9	3.9 (△-2%)	3.6 (△-5%)
Proximity to nature	3.1	2.8 (△-5%)	4.0 (△23%)

Note: Rating are in response to the questions "How would you rate your experience of being on public transit in terms of the following parameters, when you have audio playing on your headphones: how good was your mood, how safe did you feel, how much did you enjoy your time, how relaxed did you feel, and How close you felt to nature?" from 111 online surveys.

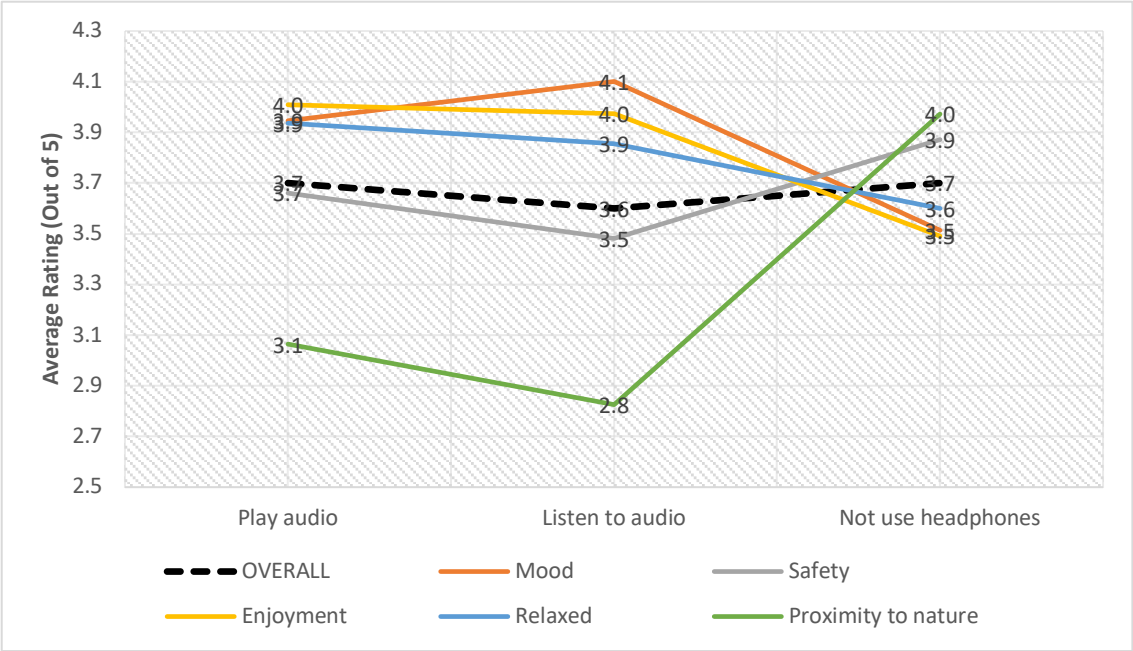

Figure 7.1 People's experiences of being in parks when playing audio, listening to audio, and not using headphones at all.

Respondents' experiences of using headphones in Washington Square Park, in an overall sense, was found to worsen when listening to audio compared to playing audio. This is a decline of 2% based on the average ratings of 32 on-site survey respondents. A further decline of 4% in the overall experience was reported when respondents do not use headphones at all, compared to when they actively listen to audio (see Table 7.27 and Figure 7.2). Much like the overall experience, respondent's level of enjoyment also dropped (see Figure 7.2) as respondents play audio, listen to audio, and not use headphones at all in Washington Square Park. The degree of relaxation remained the same when respondents play audio and listen to audio but dropped by 15% when no headphones were in use. Respondent's moods also worsened by 14% when not using headphones compared to when they listen to audio. However, respondents' moods were reported to improve slightly, by 1%, when listening to audio compared to when just playing audio.

Respondent's sense of safety and how close they felt to nature on the other hand were found to worsen as respondents listen to audio compared to when they play audio and was found to improve when no headphones were in use.

Table 7.27 People's Experiences of Being in Washington Square Park When Playing Audio, Listening to Audio, and Not Using Headphones at All

Experience	Play Audio	Listen to Audio	Not Use Headphones at All
	Average rating out of 5.0 and the improvement (positive percentages) or decline (negative percentages) in experiential elements when playing audio, listening to audio, and not using headphones at all N.B. "△" depicts change		
Overall experience	4.0	3.9 (△-2%)	3.7 (△-4%)
Mood	4.4	4.4 (△1%)	3.7 (△-14%)
Safety	4.0	3.7 (△-5%)	4.0 (△6%)
Enjoyment	4.3	4.1 (△-3%)	3.5 (△-12%)
Relaxed	4.1	4.1 (△0%)	3.3 (△-15%)
Proximity to nature	3.3	3.3 (△-1%)	3.8 (△10%)

Note: Rating are in response to the questions "How would you rate your experience of being in this park in terms of the following parameters, when you have audio playing on your headphones: how good was your mood, how safe did you feel, how much did you enjoy your time, how relaxed did you feel, and how close you felt to nature?" from 32 on-site surveys conducted in Washington Square Park.

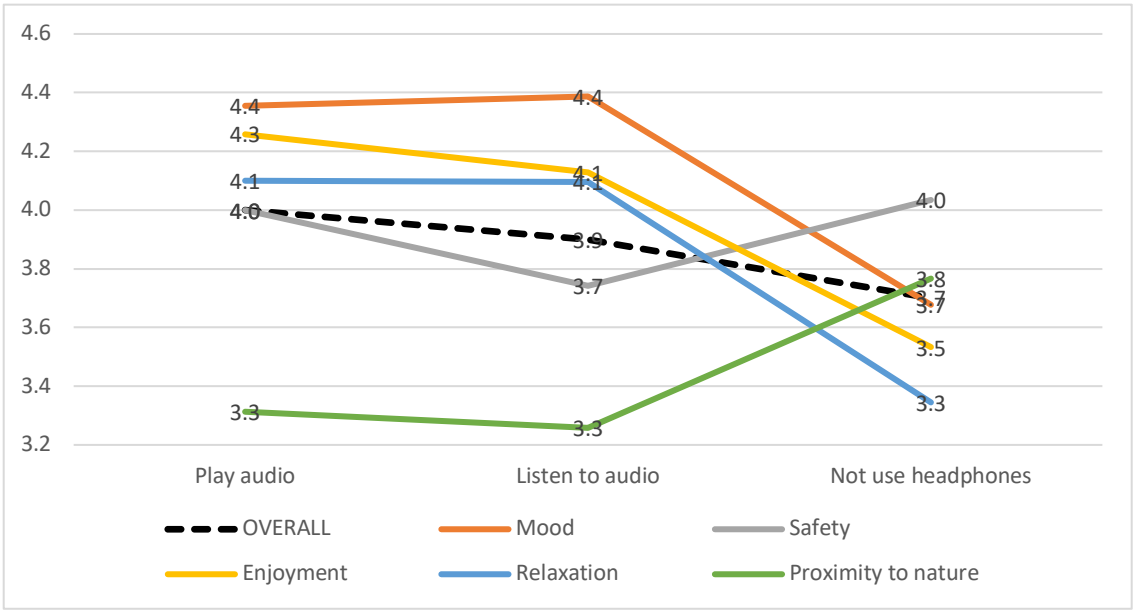

Figure 7.2 People's experience of being in Washington Square Park when playing audio, listening to audio, and not using headphones at all.

Similar to Washington Square Park, in Tompkins Square Park, people's overall experience of the park showed a decline: a 2% decline when listening to audio as opposed to when just playing audio, and a 4% decline when not using headphones compared to when listening to audio, based on the average ratings of 19 on-site survey respondents. As depicted in Table 7.28 and Figure 7.3, respondents' moods, level of enjoyment, and the degree of relaxation also worsened when playing, listening, and not using headphones. Sense of safety dropped by 3% when listening compared to when playing audio but showed a 3% improvement when no headphones are being used compared to when respondents listen to audio. Rather oddly, the proximity to nature increases by 3% as respondents listen to audio compared to when just playing audio. Proximity to nature increases by 14% when no headphones are in use.

Table 7.28 People's Experiences of Being in Tompkins Square Park When Playing Audio, Listening to Audio, and Not Using Headphones at All

Experience	Play Audio	Listen to Audio	Not Use Headphones at All
	Average rating out of 5.0 and the improvement (positive percentages) or decline (negative percentages) in experiential elements when playing audio, listening to audio, and not using headphones at all N.B. "△" depicts change		
Overall experience	4.2	4.1 (△-2%)	4.0 (△-4%)
Mood	4.4	4.3 (△-2%)	3.9 (△-7%)
Safety	4.5	4.3 (△-3%)	4.5 (△3%)
Enjoyment	4.6	4.4 (△-4%)	3.8 (△-12%)
Relaxed	4.4	4.3 (△-3%)	3.9 (△-7%)
Proximity to nature	3.2	3.3 (△3%)	4.1 (△14%)

Note: Rating are in response to the questions "How would you rate your experience of being in this park in terms of the following parameters, when you have audio playing on your headphones: how good was your mood, how safe did you feel, how much did you enjoy your time, how relaxed did you feel, and how close you felt to nature?" from 19 on-site surveys conducted in Tompkins Square Park.

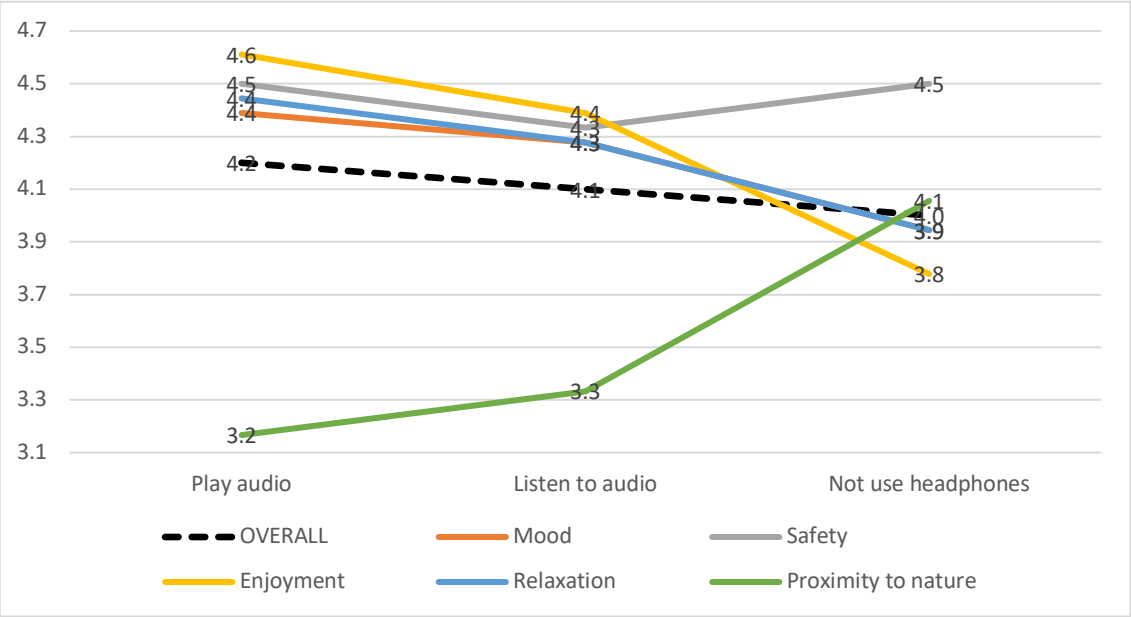

Figure 7.3 People's experience of being in Tompkins Square Park when playing audio, listening to audio, and not using headphones at all.

Respondent's overall experience in Madison Square Park was rated 4.1 out of 5.0 when playing audio on headphones. This rating remained constant when respondents listen to audio. The rating however dropped by 6% based on the average ratings of 17 on-site survey respondents, as shown in Table 7.29, when headphones were not in use at all. Respondent's mood and the level of enjoyment was reported to worsen slightly when listening to audio and continued to worsen by somewhat significant amounts when respondents do not use headphones at all. The feeling of safety remained almost unchanged when playing, listening, and not using headphones. Respondents experienced relaxation more when listening to audio compared to when playing audio. When headphones are not being used, respondent's degree of relaxation worsened by 16%. More details about respondent's experiences in Madison Square Park are depicted in Table 7.29 and Figure 7.4.

Table 7.29 People's Experiences of Being in Madison Square Park When Playing Audio, Listening to Audio, and Not Using Headphones at All

Experience	Play Audio	Listen to Audio	Not Use Headphones at All
	Average rating out of 5.0 and the improvement (positive percentages) or decline (negative percentages) in experiential elements when playing audio, listening to audio, and not using headphones at all N.B. "△" depicts change		
Overall experience	4.1	4.1 (△0%)	3.8 (△-6%)
Mood	4.3	4.3 (△-1%)	3.8 (△-10%)
Safety	4.2	4.2 (△0%)	4.2 (△1%)
Enjoyment	4.3	4.2 (△-3%)	3.5 (△-13%)
Relaxed	4.2	4.3 (△1%)	3.5 (△-16%)
Proximity to nature	3.4	3.4 (△1%)	3.8 (△7%)

Note: Rating are in response to the questions "How would you rate your experience of being in this park in terms of the following parameters, when you have audio playing on your headphones: how good was your mood, how safe did you feel, how much did you enjoy your time, how relaxed did you feel, and how close you felt to nature?" from 17 on-site surveys conducted in Madison Square Park.

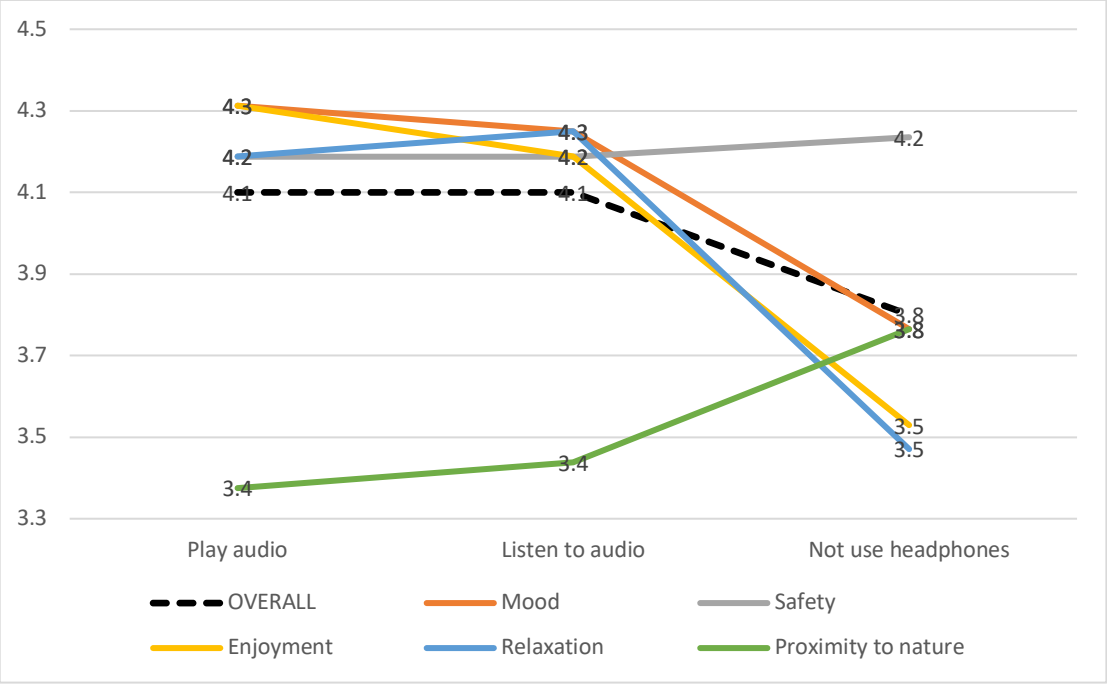

Figure 7.4: People's experience of being in Madison Square Park when playing audio, listening to audio, and not using headphones at all.

7.5.1 Experiences When Playing, Wearing, Listening, and Not Using Headphones

Based on the focus group and interview responses, people's experiences in parks when playing audio on headphones can be understood in terms of seven factors.

Playing audio on headphones in parks was found to affect people's *moods and feelings*, which contribute to the experiences people have in parks by "amplifying the experience in a good way" and "adding positively to the experience." Respondents' moods were reported to be "enhanced", and they were generally found to be "in a better mood." In addition, respondents reported to feel "less tired" even when engaging in physically demanding activities such as walking. They felt "happier" with audio playing and sometimes, depending on the audio, even "nostalgic." As one respondent stated, "[…] you might actually find that what you're playing in your ears is better than the sound that's actually outside. So, it could, in theory, enhance your mood."

Playing audio was also found to affect how *aware of the surroundings* a headphone user was. With audio playing, people were found to perceive parks as "public and open getaways from the actualities of life." With such a perspective of parks prevailing among people, often, very little attention is expended on the park itself and users were often "not fully aware" of the happenings around them. As one respondent stated, "I don't think I experience the park very much when I have headphones on. Just because when I'm listening to music, my focus is not on my surroundings, so I can't really appreciate what I'm looking at. I think when I don't have headphones on, I look at my surroundings and appreciate my surroundings a lot better." Though respondents admitted not to be aware of their surroundings when playing audio, this does not mean that they do not 'look' at their surroundings. As one respondent stated, "most of the parks that I've visited, I will look at

the trees, the people around me, the fountains or whatever. I will look at them while being in my own bubble, with my own music. I'm not going to pay attention to something happening outside unless it initiates curiosity like 'oh, I wonder what that guy is playing,' if someone is playing an instrument for instance." While playing audio, for the most part, is perceived as escapism, it nevertheless acts "as a license" to some of the unpleasantries of public life. For instance, in light of this, a female respondent stated the following: "there are times when strange men made me want to ignore them even if they are just greeting me. I feel more licensed to ignore them if I have something in my ears, and it just seems like I'm hiding behind them. Someone will say 'good morning' and I'll just look as though I didn't hear. Sometimes I really don't hear them. Of course, there have been other times when I have no earbuds and I just pretend to be deaf. But they feel like a license."

Enjoyment is an important influencer of experience. Findings suggest that playing audio on headphones, in the words of several respondents, "boosts the experience" and "makes the experience better." Playing audio also contributes to respondents' enjoyment in parks to be amplified, with one respondent stating that "I enjoy what I see" and "I enjoy everything in the park more with music." Respondents also claimed that as a result, they were prompted to prolong their stay in parks: "I feel like I can stay for a longer time when I have my headphones, because I think I'm more entertained. […] I think I definitely stay for a longer time with music […]."

The degree of *relaxation*, another determinant of people's experience was also affected when audio is played. Respondents reported to feel "more relaxed" when there is audio playing on headphones during their times in parks.

Playing audio on headphones significantly affects the degree to which people feel *close to nature*. While some respondents argue that playing audio makes them feel distant from nature as a result of their ears being occupied by headphones, some others, like the following respondent, argues that the feeling of being close to nature does not merely extend from the sense of hearing: "when I'm using headphones I experience the park visually. But also, being outdoors, there's all the sensations you know the wind, the heat. You're experiencing the outdoors through a number of senses other than the audible. It's only the audible that's not going to be there when you've got headphones in. But you might actually find that what you're playing in your ears is better than the sound that's actually outside. So, it could, in theory, enhance your other senses." A majority of the respondents feel otherwise. They report, as a result of playing audio, to be able "to concentrate more on music than the surroundings", "to not be paying attention to nature", including "not noticing and appreciating the park."

Playing audio on headphones have made the *passage of time* feel differently to some respondents. One participant stated that they felt the "time spent in parks go by quickly" when there is audio playing. In line with this, another respondent reported that with audio playing, they tend to spend longer periods of time in public parks.

The effects of playing audio on the *feeling of isolation* work in both directions: some have reported to feel isolated and alone while some others find solace and a sense of accompaniment. Regarding the former type of respondents, the responses gathered reveal that they feel isolated and separate from everything that is happening around them. This is reported with positive connotations, with such feelings of isolation reported to be "meditative," giving these respondents an opportunity to reflect on and pay attention to

themselves. With regard to the latter type of respondents, their responses reveal that they feel that they are not alone, and do not feel isolated and boring when having audio playing.

Out of 9 interview respondents (n = 9) that chose to respond to question of whether their experiences in parks were different from their experiences when just wearing headphones, 89% (n = 9) reported that they did experience parks differently, while 11% (n = 9) reported that there was no difference in the experience. Among the reasons behind the different experiences is the *distraction* that emerges as result of just wearing headphones without any audio. As several participant explained, "without audio playing, I can hear what's going on outside and it's distracting for what I'm trying to do or think of", and "I will hear others listening or like talking to each other, dogs barking, all those outside sounds will influence my experience." A second reason that explains the difference in experience is attributed to the different level of *awareness of surroundings* that comes with just wearing headphones. As one respondent stated: "I feel more connected to the place and what's happening around without anything playing."

The investigation of whether people's experiences were different when paying attention to the audio, i.e., listening, as opposed to when they were not paying attention to the audio playing, i.e., hearing, revealed that 67% of the respondents, based on 3 focus group respondents (n = 3), found that listening made no difference to experience. Only 33% (n = 3) of respondents claimed that listening did make the experience different. The main reason for this difference was the *immersion* in the audio, where one instance (playing audio) provided the opportunity for immersion and the other (just wearing), did not.

Out of 23 interview respondents (n = 23) who choose to share their thoughts about the difference (if any) in experience when not using headphones at all in parks, 87% (n =

23) stated that there was a remarkable difference in experience when not using headphones as opposed to when using them. These differences in experience can be attributed to four reasons. First are the *distractions* that surface as a result of not using headphones. These distractions may be imposed by the surrounding environment, for instance, when there are loud noises occurring; or even mental, corresponding to the internal chaos within people. As people typically use headphones to avoid these types of distractions, instances that people do not use headphones contribute to the exacerbation of distractions, resulting in their experiences to be affected. Second is the degree to which headphone users feel *close to nature*. With headphone use, people often become oblivious of the nature and natural elements of parks, which affects their experience of parks. As one respondent stated, "I think when I don't have my headphones on, I'm using all of my senses to take in what's around me, so I'll listen to the birds and feel the temperature on my skin. And when I have my headphones on, I feel like I block out a little bit of those senses. Somedays I don't want to have my headphones on and enjoy everything around me but some other days, I find it pleasurable to create whatever environment I want." Third is the degree of *comfort*, which is an important contributor to one's experience. Sometimes, using headphones may not be very comfortable and such instances may negatively affect users' experiences of parks. The final factor is how *aware* users are of their environments and their general surroundings. Awareness of surroundings contributes greatly to one's experience as not only does it give a sense of safety but it also a sense of "being in the know." In line with this, one respondent shared the following thoughts: "most of the time, I wear headphones is to block out everything that's happening. So, when that is not happening, I can take in the things that are happening around me and whatever the park is offering."

The interview data also revealed that 9% (n = 23) of the respondents stated that there were no differences in experience when not using headphones as opposed to when using them, and 4% (n = 23) remained oblivious to any differences.

CHAPTER 8

USE OF HEADPHONES ON PUBLIC TRANSIT

The frequency at which people use headphones on public transit, regardless of whether they play audio or wear them without audio, is as follows, based on the responses received from 125 web survey respondents: a majority of 41% (n = 125) of the respondents stated to use headphones most of the time on public transit, 36% use headphones only sometimes, and 23% use headphones every time they are on public transit.

8.1 Reasons for Using Headphones

Regardless of whether people play audio on headphones or just wear them, the reasons why people *use* headphones on public transit in an overall sense, can be understood in terms of 14 factors (see Table 8.1). Using headphones to *keep busy or be entertained* and to *make time go by faster* are the most frequently reported reasons for headphone use on public transit.

Table 8.1 Reasons Why People Use Headphones on Public Transit

Reasons	Frequency of Responses and Percentages
To keep busy or entertained	89 (13%)
To make time go by faster	87 (13%)
To reduce or cancel outside ambient sounds that I do not wish to hear	76 (12%)
To be less disturbed by the surroundings	76 (12%)
To be socially unavailable from other people	62 (9%)
To relax	58 (9%)
To listen to something particular	58 (9%)
To avoid causing nuisance to others with my audio	39 (6%)
For convenience, including to make or receive phone calls hands free	36 (5%)
To concentrate on something, such as a task at hand	27 (4%)
Out of habit	23 (3%)
To have a more intimate listening experience	18 (3%)
To relieve any disorders I sometimes experience, such as tinnitus, PTSD, and ADHD	7 (1%)
To relive particular past experiences tied to certain audio	4 (1%)
Total responses	660 (100%)

Note: Frequency of responses to the question "When you are on public transit, why do you wear headphones regardless of whether or not you are playing audio?" from 134 online surveys.

On the PATH train in particular, in an overall sense, i.e., without regard to whether people play audio not, the reasons that people use headphones are depicted in Table 8.2. According to 213 responses (n = 213) gathered from the on-site surveys, the most frequently reported reason for using headphones is to *keep busy or be entertained*. This was reported at a frequency of 15% (n = 213). At a frequency of 1% (n = 213), people reported to use headphones for purposes that are different from those undermentioned. These include using them because "it seems to be a social requirement nowadays", and because they enable the ability to "multitask, particularly, getting to a place and getting work done at the same time."

Table 8.2 Reasons Why People Use Headphones on the PATH Train

Reasons	Frequency of Responses and Percentages
To keep busy or entertained	32 (15%)
To relax	28 (13%)
To make time go by faster	27 (13%)
To be socially unavailable from other people	23 (11%)
To be less disturbed by the surroundings	19 (9%)
To reduce or cancel outside ambient sounds that I do not wish to hear	16 (8%)
To listen to something particular	13 (6%)
For convenience, including to make or receive phone calls hands free	11 (5%)
Out of habit	11 (5%)
To avoid causing nuisance to others with my audio	9 (4%)
To have a more intimate listening experience	8 (4%)
To concentrate on something, such as a task at hand	7 (3%)
To relieve any disorders I sometimes experience, such as tinnitus, PTSD, and ADHD	4 (2%)
To relive particular past experiences tied to certain audio	3 (1%)
Other	2 (1%)
Total responses	213 (100%)

Note: Frequency of responses to the question "When you are on the PATH, why do you wear headphones regardless of whether or not you are playing any audio?" from 49 on-site surveys.

8.1.1 Reasons for Playing and Not Playing Audio

The results of the web surveys with 124 respondents also revealed that 67% (n = 124) of the respondents always play audio on headphones when on public transit, while 32% reported to alternatively both play and wear. Only 1% of the respondents reported to always wear headphones without audio playing.

The reasons why people play audio on their headphones on public transit extend beyond their need to simply listen to audio (it is however, the second most frequently reported reason). In fact, 8 reasons that explain why people play audio on headphones when

on public transit were identified from the 32 interviews that were conducted (see Table 8.3).

Table 8.3 Reasons for Playing Audio on Headphones on Public Transit

Reasons	Frequency of Responses and Percentages
For isolation	13 (30%)
To listen to audio and be entertained	10 (23%)
To reduce/cancel noise	7 (16%)
For temporal reasons	5 (11%)
To compliment and encourage activities	5 (11%)
To relax	2 (5%)
For concentration	1 (2%)
Out of routine or habit	1 (2%)
Total Responses	44 (100%)

Note: Frequency of responses to the question "Why do you play audio on headphones when you are on public transit?" from 32 in-depth interviews.

The most frequently reported reason that encourages people to play audio is for purposes of *isolation* (see Table 8.3). People use headphones as a symbol, to discourage strangers from approaching and interacting with them. In such instances, headphones also serve a paradoxical role by isolating people from their immediate surroundings yet making them feel drawn to a mediated elsewhere that exists on an auditory dimension. In other words, the audio playing provides a form of companionship to people, making them feel like they are not alone or isolated.

The second most frequently reported reason for playing audio is *the need to listen to audio or be entertained* by it (see Table 8.3). Three out of 10 interview respondents reported that they play audio for purposes of listening, be it music, videos, podcasts, or even a phone call. Seven out of 10 respondents claimed to do so to be entertained, which

is typically triggered when respondents want to "avoid boredom", "not feel sleepy", and "just have something to do when there is nothing else."

People also play audio to *reduce or cancel outside noise*, as, needless to say, public transit can be loud places with a variety of cacophonous and intrusive sounds (see Table 8.3). One respondent elaborated their thoughts on this as follows: "I play something to block out the noise, besides listening. Or if I don't want to associate with people. I have strict boundaries on transit. It depends on what transit it is. If you take NJ Transit over the weekend, it is unbelievably crowded and noisy, so I put on headphones even if I'm not listening to anything because I can't stand that noise. It depends on the car and depends on who is riding too. Usually in the morning, the business crowd, except for this one odd person talking really loudly, people are quiet at 7 in the morning. If you go in the evening or the weekends, you find some serious weirdos around here that ride the train to get to the city. I don't want anything to do with them."

Playing audio gives people the sense that *time passes by faster* than usual. This is another reason why people play audio on headphones when on public transit (see Table 8.3). Transit rides can sometimes be "long and boring", and audio helps people alleviate this to some degree.

Playing audio also *compliments and encourages activities* (see Table 8.3). For instance, one out of five respondents mentioned that they like to read while having audio playing as the noise cancellation and social isolation that entail make it ideal to pursue such activities. Also, four out of five respondents mentioned that playing audio provides a "great opportunity to be productive", "to learn something new" (which strictly depends on the type of audio respondents choose to play), and "feel like their time is not wasted." At

relatively low frequencies, the following reasons were also reported to encourage people to play audio on headphones on public transit: to *relax*, to be able to *concentrate better*, and out of *routine practices or habits*.

People also use headphones without playing audio on them. From the focus group and interview responses, 10 reasons that explain why people just wear headphones without audio playing on them when on public transit were discovered.

Concerns for personal *safety* is one reason why people just wear headphones. When concerns regarding safety arise on public transit, people have reported to halt the audio and continue to just wear headphones. "If it's [transit] empty and there is someone that makes me feel not very safe, I just put my headphones on and not put any audio. I just pretend that I'm listening to something" said one respondent in this regard.

People wear headphones for purposes of being *isolated* or "left alone" on public transit. Often, people are approached by strangers for a variety of reasons and wearing headphones serves as a cue to not be approached. As one respondent described, "[…] it's to dissuade people from talking to me because if there's somebody who wants to ask me a question, and I'm not feeling it, I put my headphones on so that they can kind of see like 'oh she's distracted, she's not easy to talk to.'" While headphones are worn to dissuade strangers from approaching, sometimes, certain interactions cannot be avoided. In such instances, headphones are worn without any audio playing (audio may be temporarily paused or stopped), in order to *facilitate* these *social interactions*. This means that wearing headphones sometimes dissuades social interactions, while facilitating them during other times. "So, if I see someone, or if I run into somebody I know, I'll leave them [headphones] on just because they're getting off soon. I'll turn down the volume, but I'll still leave them

on, so they know I'm listening to them and not avoiding the conversation" said one respondent.

People also wear headphones when they feel the need to *be attentive towards their immediate surroundings* without catching other people's attention. In regard to this, a common response that was reported was that wearing headphones allows people to eavesdrop on other people's conversations. "If I'm on the subway and if there are interesting people talking, I like to pause my music and eavesdrop on their conversations" said one respondent and "I like to listen to other people but without being noticed, so I put my headphones on but without any music so I can listen to someone else" said another.

Reducing or cancelling noise is another reason people wear headphones on public transit. Wearing headphones, although without any audio, helps "make everything a little bit quieter" according to one respondent. People sometimes also wear headphones because they are absent-minded or *forgetful*, resulting in their forgetting to turn the audio on. As a result, they sometimes wear headphones without any audio playing.

Some people wear headphones simply because it is *convenient* to have them on than having to put them on when on public transit. This is particularly relevant when one is expecting to receive a phone call. The researcher also observed an ideal example for this on the PATH train, when a disabled man with amputated wrists boarded the train with one earpiece of his headphones already in one of his ears. The man who shortly got a phone call was easily able to answer the call through voice commands and be fully attentive to it as the headphones were conveniently already worn.

Connectivity issues such as loss of phone signals or interrupted internet connections is another reason why people sometimes wear headphones. "I take the PATH from

Harrison to 33rd street, mostly there's a brief overlap when I don't get any network on my phone so that time, my headphones are in my ears but there's no music playing. It's not by a choice, it's something that happens" said one respondent.

Headphones double as earmuffs and provide *insulation* to the ears during periods of cold, harsh weathers, which is another reason why people wear headphones. *Ear fatigue* is another. Ear fatigue occurs when people have been playing audio for extended periods of time which results in the ears becoming exhausted. When this occurs, people temporarily halt the audio while still wearing the headphones in attempt to relieve the ears. "[…] If I've been listening to music for a while and I have some ear fatigue, since I've been listening to music for some time, I might still have them on but with no music playing" said one respondent in this regard.

8.1.2 Variations in the Use of Headphones

The temporal effects of, particularly, the time of day, day of week, and time of year on headphone use were investigated.

In understanding whether the time of day played any significance towards people's headphone use decisions, it was evident, based on a total of 30 interviewees (n = 30) as depicted in Table 8.4, that a majority of 57% of the respondents did not believe that the time of day, i.e., whether it was morning, afternoon, evening, or night made any difference in their use of headphones. However, 43% (n = 30) of the respondents did believe that the time of day affected aspects of their headphone use. In particular, two aspects of headphone use were found to be affected by the time of day. These are: the type of audio that is played, and the volume at which audio is played.

Table 8.4 Use of Headphones in Public Transit vs. Time of Day

Whether the Time of Day Affects the Use of Headphones	Number of Respondents and Percentages
Yes	13 (43%)
No	17 (57%)
Total Respondents	30 (100%)

Note: Number of respondents in response to the questions "Does your use of headphones on public transit differ according to the time of day? Can you tell me why?" from 32 in-depth interviews.

Three reasons were discovered based on the interview responses that explain the differences in headphone use on public transit based on the time of day. First is wanting to get into a particular *headspace* during different times of the day. For example, in the morning, people may want to be energetic and lively in order to take on the day. This is in opposition to evenings and night times where people typically feel exhausted and want to relax. The types of audio played in these two instances are dependent upon how they feel, or the headspace they may want to be in. For instance, "if I'm going to work in the morning, I probably listen to music, but when I'm coming back, I'll probably watch videos. In the morning I normally listen to high volume music, high intensity music so that my mind starts working. And coming back, I just do something relaxing" said one respondent and "when I'm going to work, I have podcasts and audiobooks, when I'm returning, I'm exhausted so I might play some songs" said another.

The second reason that explains different headphone use during different times of the day has to do with the *times that* certain *audio gets released*. In other words, certain kinds of audio, like podcasts for instance, get released during particular times of the day. This results in people who are keen on listening to these podcasts to listen to them during these times. This could be explained in the words of several respondents: "the type of music or the type of the thing I'm listening to will differ. So generally, podcasts are released

during the daytime around 7/8am. So, if I'm travelling early in the morning, if I had to go to my college or office, I'll listen to these. While I'm coming back I'll listen to audiobooks" and "in the mornings, I would listen to music, but in the evenings, particularly between 4-6pm, I listen to audiobooks because the market at Wall Street was open and I want to know how the market was doing."

Lastly, the extent to which public transit is *crowded* results in different headphone use during different times of the day. "I tend to put my headphones on more in the evening. Because knowing that these places [public transit] are going to have a different vibe, they are going to be more crowded, people are after work, everyone is trying to go home. I just don't want to be bothered by these during early evening" said one respondent in this regard.

With regard to the day of week, it was found that a majority of the respondents, as depicted in Table 8.5, stated that the day of week, i.e., whether it was a weekday or a weekend, had no effect on their headphone use when on public transit. Only 26% (n = 31) of the respondents stated that the day of week did affect their headphone use. Particularly, it is the type of audio played on headphones that was found to be affected by what day of the week it was.

Table 8.5 Use of Headphones vs. Day of Week

Whether the Day of Week Affects the Use of Headphones	Number of Respondents and Percentages
Yes	8 (26%)
No	23 (74%)
Total Respondents	31 (100%)

Note: Number of respondents in response to the questions "Does your use of headphones on public transit differ according to the day of week? Can you tell me why?" from 32 in-depth interviews.

Two reasons that explain the differences in headphone use by day of week were discovered. The first, again, has to do with people wanting to get into a particular

headspace during different days of the week. Respondents have stated that they attempt to get into an energetic state of mind early during the week, in order to be able to take on the tasks lined up for the week. This state of mind transforms to a relaxed one towards the end of the week. For example, "on Mondays most certainly I'm listening to music. On Mondays and Tuesdays, I'm trying to energize myself. On Wednesday through Friday is more podcasts in the morning. In the evening, it's pretty much same across the week. On the weekends I don't ride public transit as often, I have a car, so I drive most places" said one respondent.

The second reason has to do with the degree to which public transit is *crowded* during different days of the week. The following respondent uses headphones on public transit especially during rush hours, with the only exception of Fridays, where even though they might be on public transit during rush hour, they do not feel the need to use headphones: "I used to have classes in New York on Wednesdays. I think it [use of headphones] depends on the day of the week. If it's rush hours, then I'll definitely have my headphones on. On Fridays, even when it might be rush hour, I get a little more less tensed, and the purpose of going to New York is to chill and relax, then I don't mind not having headphones on."

The time of year, according to 90% of the respondents, based on a total of 31 interviewed (n = 31) did not affect headphone use (see Table 8.6). For 10% (n = 31) of the respondents however, the time of year did make a change in their use of headphones, particularly, with regard to the type of audio played. The only reported difference in the type of audio played was, in the words of one respondent, "during Christmas, I listen to Christmas songs, otherwise, I don't think there's a difference."

Table 8.6 Use of Headphones vs. Time of Year

Whether Time of Year Affects the Use of Headphones	Number of Respondents and Percentages
Yes	3 (10%)
No	28 (90%)
Total Respondents	31 (100%)

Note: Number of respondents in response to the questions "Does your use of headphones on public transit differ according to the time of year? Can you tell me why?" from 32 in-depth interviews.

Attempts were also made to understand whether factors like travel direction, travel distance, and travel duration affected people's use of headphones on public transit.

The interview responses from 31 respondents revealed that a majority of them stated that the travel direction had no effect on headphone use (see Table 8.7). However, 45% (n = 31) of the respondents admitted that travel direction affected headphone use, while 3% (n = 31) had no opinion on the matter. Some respondents stated that the effect of travel direction on headphone use was the same as the effect the time of day has on headphone use. This is because most people travel in certain directions at fixed times of the day, for instance, going to work in the mornings and going back home in the evenings. This is evident in the following response: "so it could be another way of saying that in the morning, because I go to work, I'll be listening to news, and in the evening, because I'm coming from work, I will be listening to something like an audiobook." However, this is not always the case and therefore, the effects of time of day on headphone use and travel direction on headphone use should not be considered as having identical effects. This was confirmed by a respondent, a part-time student who attends university in the evenings: "when I'm going to school, I'm looking forward to a good day, so I might listen to music that's more cheerful. And maybe when I'm coming back, that's when I catch up on my podcast episodes."

Table 8.7 Use of Headphones vs. Travel Direction

Whether Travel Direction Affects the Use of Headphones	Number of Respondents and Percentages
Yes	14 (45%)
No	16 (52%)
I don't know	1 (3%)
Total Respondents	31 (100%)

Note: Number of respondents in response to the questions "Does your use of headphones on public transit differ according to what direction you are travelling in? Can you tell me why?" from 32 in-depth interviews.

With regard to the effects on headphone use, it was the type of audio played and the volume of the audio played in particular that were affected by travel direction. "For example, if I'm going to work, I probably listen to music, but when I'm coming back, I'll probably watch videos. When going to work I normally listen to high-volume music or high intensity music so that my mind starts working. And when coming back, I just play something relaxing" said one respondent. One reason was reported that explained the differences in headphone use based on travel direction. This was the need for people to be in a particular *headspace* when travelling in different directions. A respondent elaborated this as follows: "[…] I guess it's what sort of a mental space I'd like to be in, and how I like to trick myself. So usually, I've noticed that let's say, when I'm going to New York City, I know that I'm going to go partying with my friends, or if I'm just going to explore, I would listen to a lot more upbeat music. But once I'm done partying or meeting people and I'm coming back, I'm tired, then it's a lot more sober music."

At the same time, for a majority of 70% of the respondents out of a total of 30 interviewed (n = 30), the distance traveled did impact their headphone use (see Table 8.8). Particularly, (1) people's decision whether to use headphones at all or not ("if I was going a long distance, I'm more likely to listen to a podcast or an audiobook. And if I was going

a shorter distance, maybe music, and if it was a really short trip I wouldn't put them on at all, because I have them in my backpack and it doesn't feel like it's worth my time to take them out of the backpack, connect them to my phone, and then turn on and pick out music and then you have reached your stop"); (2) whether to play audio or not ("so generally, when it's [the ride] 20 minutes, 30 minutes, like more than half an hour I would generally put my headphones on and listen to something. But if it's a shorter journey, I'll just put my headphones on and not listen to anything. Because I need to be aware. I will generally be standing and not take a seat if I'm on a shorter journey"); and (3) the type of audio to play ("if it's a really long journey, maybe I would actually listen to a podcast episode knowing that I would be able to finish that episode within the commute, as opposed to a shorter journey") were affected. With regard to the type of audio, in particular, audio that were generally longer ("when I'm going on a long trip I watch shows like Netflix. But for short distance, probably I listen to music"), more engaging, and are interconnected by being a part of a larger series/album/playlist were sought when on public transit. "I'm more likely to have them in for longer if it's a longer trip and I'm more likely to listen to music with a connected theme if it's a longer trip. When I say connected theme, I mean an album as opposed to a single song" said one respondent.

Table 8.8 Use of Headphones vs. Travel Distance

Whether Travel Distance Affects the Use of Headphones	Number of Respondents and Percentages
Yes	21 (70%)
No	8 (27%)
I don't know	1 (3%)
Total Respondents	30 (100%)

Note: Number of respondents in response to the questions "Does your use of headphones on public transit differ according to how far you are travelling? Can you tell me why?" from 32 in-depth interviews.

While a majority of respondents stated that the travel distance made a difference in their use of headphones, 27% (n = 30) of the respondents reported that travel distance did not amount to any differences (see Table 8.8). Three percent (n = 30) of the respondents had no opinion on this matter.

Upon investigating the effects of travel duration on the use of headphones, it was discovered that a majority of the respondents out of a total of 18 interviewed (n = 18), reported that travel duration did affect their headphone use (see Table 8.9). Particularly, (1) the decision whether to use headphones or not ("if it's a real short trip there's a chance I may not use it. Just because sometimes if I don't have them already around my head, in the pocket or something, then I have to untangle it. […] Sometimes it doesn't feel worth it to sit there and fiddle with it. Sometimes I'll be done fiddling with it and by the time, the bus would already be there. For a long trip, anything over 10 minutes, I'll definitely be wearing headphones unless I forgot them that day"), (2) the type of audio played ("if it was a shorter trip more likely to listen to music or not at all and if it was a longer trip, then I probably feel like I want to listen to something more invested like an audiobook or podcast"), and (3) the length of audio ("if I'm traveling a further distance I might listen to something that I know is longer. So, a podcast, for example, which is longer in length, than when travelling a shorter distance where I might choose something that I can listen for the entirety of in that shorter time period") were affected by the travel duration. Though a majority agreed, 39% (n = 18) of the respondents disagreed that the travel duration affected their headphone use (see Table 8.9).

Table 8.9 Use of Headphones vs. Travel Duration

Whether Travel Duration Affects the Use of Headphones	Number of Respondents and Percentages
Yes	11 (61%)
No	7 (39%)
Total Respondents	18 (100%)

Note: Number of respondents in response to the questions "Does your use of headphones on public transit differ according to how long a trip will take? Can you tell me why?" from 32 in-depth interviews.

Data collection for this dissertation was conducted during the COVID-19 pandemic, therefore, the responses must inherently be biased compared to data that might have been gathered under pre-pandemic circumstances (see Table 8.10). It was revealed from the online surveys that a majority of the respondents believed that their use of headphones had not changed during the pandemic compared to pre-pandemic times. Only 15% (n = 123) of the respondents admitted that headphone use on public transit had changed. At the same time, 33% (n = 123) of the respondents remained oblivious about changes in headphone use, responding with an "I'm not sure" in the online survey.

Table 8.10 Changes to Headphone Use on Public Transit during COVID-19

Whether the Use of Headphones Changed During COVID-19	Number of Respondents and Percentages
Yes	18 (15%)
No	65 (53%)
I don't know	40 (33%)
Total Respondents	123 (100%)

Note: Number of respondents in response to the questions "Do you think your current use of headphones on public transit has changed during the COVID-19 pandemic?" from 134 online survey responses.

According to the 15% of respondents who admitted change, these changes could be explained in terms of three factors. The first factor pertaining to headphone use that has changed is the *usage* of headphones itself. Some respondents stated that they feel there has been an increase in the number of people using headphones ("more people use earphones

because they are not many people to talk around"), while some other respondents rather contrarily stated that they have experienced a decline in headphone use, including themselves ("I almost never wear it now. I try to get in as much as 'outside' I can while commuting"). The *duration* for which headphones are used was also found to be longer. In the words of a respondent, "people are more likely to use headphones as soon as they leave their home until they reached their destination." The third factor regarding headphone use that has changed is the *volume* at which audio is played. Respondents stated that the volume at which they play audio on headphones on public transit remained lower than during pre-pandemic times. This was so that they could be "more alert about sick individuals." Affirming this, one respondent said, "I would keep the volume down to hear if anyone is coughing nearby so I can move away."

With regard to the PATH train, the 49 on-site surveys revealed that a majority of the respondents stated that their use of headphones on the PATH train has not changed over the course of the COVID-19 pandemic compared to times before (see Table 8.11). Only 4% (n = 49) of the respondents admitted to changes in headphone use, with them reporting an increase in the duration of headphone use. This increased duration was the only change reported in headphone use. Also, 35% of the respondents remained oblivious to any differences, responding with "I'm not sure" to the question raised.

Table 8.11 Changes to Headphone Use on the PATH Train during COVID-19

Whether the Use of Headphones Changed During COVID-19	Number of Respondents and Percentages
Yes	2 (4%)
No	30 (61%)
I don't know	17 (35%)
Total Respondents	49 (100%)

Note: Number of respondents in response to the questions "Do you think your current use of headphones on the PATH train has changed during the COVID-19 pandemic?" from 49 on-site survey responses.

8.2 When Headphone Use Begins and Ends

When the decision to take public transit is made, people typically begin wearing headphones in one of five places in the physical environment (see Table 8.12).

Table 8.12 Places People Begin Using Headphones When Riding Public Transit

Type of Places/Instances	Frequency of Responses and Percentages
At home	13 (39%)
On public transit after sitting	10 (30%)
Immediately after boarding transit	4 (12%)
At transit stations	4 (12%)
Alighting from personal vehicles	2 (6%)
Total Responses	33 (100%)

Note: Frequency of responses to the question "When you ride public transit, when do you first put your headphones on and why?" from 32 in-depth interviews.

The most frequently reported place is people's *homes* (see Table 8.12). This is followed in frequency by *public transit*, however, these respondents reported to begin using headphones here only after seating themselves. In this regard, one respondent stated the following: "I put my headphones on as soon as I'm seated. Because generally in a crowded train, if I'm standing up, I need to be aware of my surroundings because people will get in and get off and I don't want to get in their way. So, I generally prefer not putting my

headphones on when I'm standing. Plus, a standing journey will be a shorter journey and headphones won't be required for a 5-minute or 10-minute subway ride, so I really don't put them on." The only reported instance where respondents begin using headphones after boarding the train while still remaining standing was when accessing headphones was deemed convenient by them: "typically when I sit down and have all of my stuff settled, putting on headphones is one of the first things I do. If I'm standing, I probably wouldn't put them on unless I didn't have any things with me, and it was accessible. Typically, I would have them in a backpack or something and it would be too much work to take them out" said one respondent. Respondents begin using headphones *immediately after boarding* public transit regardless of whether they sit or stand. Respondents also reported to begin using headphones *at the transit stations* while waiting to commute. Lastly, respondents reported to begin using headphones *while alighting from their personal vehicles* well before entering the transit station. One respondent stated: "I put it [headphones] on even before I get into the train. Knowing that I'm going to go somewhere, I already have it as soon as I park my car. My first order of business as soon as I step out of my car is to put on my headphones and even while walking to the train station from the parking lot, I already have my headphones on."

Furthermore, the focus groups and in-depth interviews identified several reasons why people begin using headphones at these places in particular. The first reason is out of *habit*, simply because people have been doing so for an extended period of time. In other words, beginning to use headphones at these places have become a habit or a routine for people. In the words of a respondent, "sometimes if I know I'm going to use public transport, if I'm planning to come to New York and I live in New Jersey, I actually I put

my headphones on from my home. […] There's no reason for that, it's like a psychological thing. I know I'm going somewhere so I just put it [headphones] on, there is no specific reason, I never think about it, it's psychological."

People begin using headphones at particular places also because of *convenience*. This convenience factor entails several facets including: that it may be convenient for people to put on headphones in some places than others; headphones may be easily accessible to people in certain places than others, for instance, "it depends on how comfortable it is to reach into my pocket and turn the songs on"; and it may be safer to begin using headphones at certain places than others, for instance, "I put on headphones right after the journey begins and I end it right before the journey ends. I don't do it when I'm trying to board or alight public transport because I might just drop them if I wear them at that point."

Another reason why people begin using headphones at particular places is to be *aware* of their surroundings. In this regard, one respondent stated the following: I put on my headphones as soon as I'm seated. Because generally in a crowded train, if I'm standing up, I need to be aware of my surroundings because people will get in and get off and maybe I don't want to get in their way. So, I generally prefer not putting my headphones on when I'm standing."

Some people also begin using headphones at certain places out of *boredom* or if they have nothing else to engage in. For instance, "I put on headphones while waiting for the bus to come. If I had to wait for a long time then I usually wear it before getting into the bus. But if I have walked from my house and it's coming in 1 or 2 minutes, then I wouldn't wear it before I get on" said one respondent, whose response suggests that they

begin using headphones because they were bored and had nothing else to engage in while waiting for public transit, hence chose to entertain themselves.

Another reason why people begin using headphones at particular places is to *block out or cancel loud sounds* on public transit. In the words of two respondents: "if I know that I'm going to get into a train, I will definitely put the headphones on when I leave the house because I know that I'm going to be in a loud environment" and "I put it [headphones] on even before I get into the train knowing that I'm going to go somewhere. […] my first order of business as soon as I step out of my car is to put on my headphones and even while walking to the train station from the parking lot, I already have my headphones on. Just because these places are going to be busy and there's going to be a lot of noise on the train and people talking loudly, and I don't want to deal with all that. I just want to get to where I want to go."

Closely followed by people's need to cancel and block loud sounds on public transit is their need to *avoid interactions* and make themselves socially unavailable. This is another reason why people begin using headphones at certain places when a decision to take public transit has been made. For instance, one respondent begins using headphones as they depart from their house for the following reason: "I would be leaving my house and before I get out of the door I put my headphones on and walk to the bus station or train station. Because after that, I would be in a public place and there might be people that ask me for money or something, so I would put headphones on for that reason."

The final reason for people to begin using headphones at a particular place is to have an uninterrupted and *seamless listening experience* as they move through different spaces. One respondent elaborated on this as follows: "I put on my headphones in my

apartment. As I go down to my car, if I'm listening to something, Bluetooth in the car takes over. And when I get out of the car if it's [headphones] in my ear, the audio will continue so I can keep listening."

These aforementioned reasons why people begin using headphones could be better understood in conjunction with the particular places in which they begin to do so (see Table 8.13).

Table 8.13 Reasons for Beginning to Use Headphones in Public Places When Riding Public Transit

Types of Reasons	Types of Places				
	Frequency of responses and percentages in each place and each category				
	At home	**When settled on transit**	**At the transit stop**	**On transit**	**In personal vehicle**
Out of habit	3 (38%)	-	-	-	-
For convenience	2 (25%)	3 (50%)	1 (25%)	-	-
To be aware	-	1 (17%)	-	-	-
Out of boredom	1 (13%)	1 (17%)	2 (50%)	3 (75%)	-
To block/cancel sound	1 (13%)	1 (17%)	-	1 (25%)	1 (100%)
To avoid interactions	1 (13%)	-	-	-	-
For seamless listening	-	-	1 (25%)	-	-
Total Responses	8 (100%)	6 (100%)	4 (100%)	4 (100%)	1 (100%)

Note: Frequency of responses to the question "When you ride public transit, when do you first put your headphones on and why?" from 32 in-depth interviews.

Instances when people begin using headphones when riding the PATH train are different from those that pertain to public transit in general. However, the most frequently reported place that people begin using headphones for public transit in general and the PATH train remains to be people's homes. After deciding to take the PATH train, a majority of the respondents reported to first begin using headphones at their homes or as they departed from their homes (see Table 8.14). At the same time, some respondents begin using headphones once they reached the PATH station and after settling themselves down

on the PATH train. This was followed in number by a few respondents who begin using headphones right as they board the PATH train.

Table 8.14 When People Begin Using Headphones When Riding the PATH Train

Type of Places/Instances	Number of Respondents and Percentages
When I left my house/apartment	27 (55%)
As I got to the train station	9 (18%)
After settling down on the train - either after sitting or finding a place to stand	9 (18%)
Right before or as I boarded the train	4 (8%)
Total respondents	49 (100%)

Note: Number of respondents in response to the question "When you decided to take the PATH, at what point did you put your headphones on?" from 49 on-site surveys gathered on the PATH train.

8.2.1 When People Begin Playing and Listening

A variety of places and instances when people begin playing audio were reported (see Table 8.15). Based on the interview responses, the most frequent instance respondents begin playing audio was immediately after wearing headphones. These responses do not emphasize on the precise location in the physical environment where people begin playing audio. The second most-frequent places and instances were people's homes, immediately after boarding public transit, and after finding a seat on public transit. Transit stations, be it bus stops, subway stations, or other such spaces are where respondents begin to play audio at a frequency of 10% (n = 31). Lastly, at low reported frequencies, respondents begin playing audio as public transit departs from the station ("once the train has left the station, or any public transportation has left the station. Just to make sure, sometimes I have taken the wrong train, so I want to listen and make sure am I on the right track. And also, to try and gauge a sense of the environment, like what kind of people I am surrounded by. When I feel comfortable, then I turn it on") and as they alight from their personal vehicles

("Because I'm a commuter, I usually park my car near the subway station and so my order of business as soon as I get out of the car is to put on my headphones and the audio should be playing").

Table 8.15 When People Begin Playing Audio When Riding Public Transit

Type of Places/Instances	Frequency of Responses and Percentages
Immediately after wearing headphones	8 (26%)
At home	6 (19%)
Alighting public transit	6 (19%)
Seated on public transit	6 (19%)
At transit stations	3 (10%)
When public transit departs	1 (3%)
Alighting from personal vehicle	1 (3%)
Total Responses	31 (100%)

Note: Frequency of responses to the question "When you ride public transit, when do you turn the audio on?" from 32 in-depth interviews.

Though for the most part, the aforementioned places and instances are where and when people begin playing audio when riding public transit, the decision to play audio at these places sometimes varies based on a series of factors. Four such factors were reported in the interviews. The first is the *distance* a person must *walk* in order to get to public transit. Second, the degree to which there are *distractors* present along the way when getting to public transit. A respondent elaborated on these as follows: "it's a 5-minute walk to my station. I put my headphones on and actually start playing music before I leave my place. And if it's a long walk, and I know there will be traffic and other things, then I don't put on any music, but once I enter the public transport, I start playing the music. It's a really crowded place so I stop the music when I'm getting out or when I'm getting in. But once I'm in, I play the music." The third factor has to do with the degree to which public transit may be *crowded* or empty, and fourth, the *presence of the people* who make headphone

users feel unsafe: “I play audio as soon as I put the headphones in my ears. If I feel safe, and if it's fairly occupied or crowded, I don't care that much. But if it's empty and there is someone that makes me feel not very safe, I just put my headphones on and not put any audio. I just pretend that I’m listening to something” said one respondent.

When taking the PATH train however, the places and instances where people begin to play audio are different from those aforementioned. However, much like on public transit in general, the instance at which most respondents begin to play audio is immediately after wearing them (see Table 8.16). This was followed in number by respondents who begin playing audio shorting after putting headphones on but before boarding the PATH train. Lastly, some respondents also reported to begin playing audio shortly after boarding the PATH train.

Table 8.16 When People Begin Playing Audio When Riding the PATH Train

Type of Places/Instances	Number of Respondents and Percentages
Almost immediately after putting my headphones on	27 (55%)
Shortly after putting headphones on but before boarding the train	13 (27%)
Shortly after boarding the train	9 (18%)
Total respondents	49 (100%)

Note: Number of respondents in response to the question “When did you first turn the audio on when you decided to take the PATH?” from 49 on-site surveys gathered on the PATH train.

Among those who play audio when on public transit, a majority, more precisely, 80% out of the 31 respondents that took part in the interviews, reported to begin listening almost immediately after beginning to play them. Only 13% (n = 31) of the respondents reported that they did not immediately begin listening. One respondent stated the following in this regard: “it takes a couple of seconds to make the link or to immerse myself in what's being played, so I generally rewind the audio 2-3 minutes back, so I know I will be there and can start listening.” For 6% (n = 31) of the respondents, whether they begin listening

to the audio immediately after it begins playing cannot be understood as a simple "yes" or "no" because their decision depends on factors like the degree to which public transit is crowded, the degree to which distractors are present in the environment around them, and their moods and feelings at the time.

The listening behaviors of people riding the PATH train are depicted in Table 8.17. A majority of respondents begin listening to the audio immediately after turning it on (see Table 8.17). This was closely followed in number by respondents who begin listening moments after the audio begins playing. One respondent stated that they never pay attention to the audio on headphones when on the PATH train and another respondent stated that their listening behavior strictly varied by the day.

Table 8.17 People's Listening Behavior When Riding the PATH Train

Listening Behavior	Number of Respondents and Percentages
Immediately after I turned on the audio	25 (51%)
Shortly after turning the audio on	22 (45%)
I never pay attention to the audio	1 (2%)
Other	1 (2%)
Total respondents	49 (100%)

Note: Number of respondents in response to the question "when you decided to take the PATH train and began playing audio on your headphones, when would you say you began paying attention to the audio that is playing?" from 49 on-site surveys gathered on the PATH train.

8.2.2 When People Discontinue Headphone Use

The deconstruction of PSEs occurs in two ways: when people take off their headphones, which was reported at a frequency of 46% based on a total of 46 interview responses (n = 46), and when people modify the audio that is playing on headphones by stopping, pausing, or reducing the volume, which was reported at a frequency of 54% (n = 46). Seven reasons that explain why people remove their headphones and/or modify their audio were identified

based on the focus group and interview responses, the frequencies of which are depicted in Table 8.18.

Table 8.18 Reasons for Deconstructing PSEs When Riding Public Transit

Type of Reasons	**Removal of Headphones**	**Modification of Audio**
	Frequency of Responses and Percentages	
Occurrence of social interaction	13 (43%)	12 (32%)
Ability to better pay attention	10 (33%)	14 (37%)
Being in the moment	3 (10%)	3 (8%)
Relieve users' ears	2 (7%)	1 (3%)
Alighting from public transit	2 (7%)	4 (11%)
Audio too loud	-	4 (11%)
Total Responses	30 (100%)	38 (100%)

Note: Frequency of responses to the questions "Do you ever take your headphones of when you ride public transit? Can you tell me why?" and "Do you sometimes stop, pause, or reduce the volume of the audio playing while you still have your headphones on when you are on public transit? Can you tell me why?" from 32 in-depth interviews.

The first reason that explains people's removal of headphones and their modification of audio by means of stopping, pausing, or reducing the volume is the occurrence of *social interactions* on public transit. These interactions could happen between strangers, when strangers approach to ask for directions, conductors approach to check tickets, or between people who know each other, like friends or family. Usually, if these interactions are temporary, for instance, if a stranger asks for directions, people modify their audio, which is a temporary response. This is as opposed to taking headphones off, which is more of a permanent response, which typically takes places when interactions are not temporary and generally last longer. For instance, if a person encounters a friend on public transit, the interaction may be longer than a mere inquiry for directions.

Deconstruction of PSEs take place when people feel the need to pay *more attention to their surroundings*. This need to be attentive is usually triggered by incidents in the

environment such as an announcement being made on public transit, or if people are unsure of their travel directions and feel the need to pay attention to their environments. Deconstruction of PSEs also take place when people feel the need *to be in the present moment*. On public transit, this need is typically felt when, in the words of one respondent, "if there is more interesting stuff happening on the train than music." For instance, "[…] if something was going on, like one example I can give you is in the subway, you will find these entertainers who come in and start doing something and if it's pretty good, normally I listen to them or watch them. In this time, I probably take my headphones off."

Relieving people' *ears* is also a reason for the deconstruction of PSEs. Extended periods of playing audio result in ear fatigue. Respondents have reported to deconstruct PSEs in such instances in attempt to relieve their ears. Another instance PSE deconstruction takes place is when the *audio playing* on headphones *is too loud*. Lastly, *alighting from public transit* also warrants people to deconstruct PSEs. In the words of one respondent, "[…] depending on if I have to get off, then I pause. And once I get off, I'll resume listening. I pause it when getting down because I think it helps me concentrate. Since I'm paying attention to what's playing on the earphones, it does tend to tend to take up some attention or brain cycles. And getting on and getting off of transportation require some concentration."

On the PATH train, people have reported to turn off the audio on headphones in five instances. These instances were derived from a total of 49 responses received from on-site surveys carried on the PATH train and are depicted in Table 8.19.

Table 8.19 Instances People Turn Off Their Audio When Riding the PATH Train

When People Turn Off Audio	Frequency of Responses and Percentages
At the destination	34 (69%)
After alighting the PATH train	8 (16%)
Upon hearing ambient sound	3 (6%)
Never	2 (4%)
Before alighting the PATH train	2 (4%)
Total responses	49 (100%)

Note: Frequency of responses to the questions "when you alight the PATH train, when do you turn the audio off?" from 49 on-site surveys.

According to the responses, the most frequently reported instance that respondents turn off the audio is upon reaching their desired destinations. This is usually their place of work or place of residence. This was followed in frequency by respondents who turn off their audio after alighting from the PATH train, and respondents who do so upon hearing external sounds in the public sound environment. These external sounds are typically in the form of announcements made on the train and conversations that take place that involve the respondents. Interestingly, at frequencies of 4% (n = 49) each, some respondents reported to turn off audio before alighting from the PATH train while others admitted to never turn off their audio off (see Table 8.19).

Deconstruction of PSEs on the PATH train is also achieved by the removal of headphones. According to 49 responses gathered from on-site surveys, the most frequent instance that people remove headphones is when they reach their destinations (see Table 8.20). Destinations are typically people's places of work or people's residences. As depicted in Table 8.20, people also remove headphones after alighting from the PATH train, upon hearing ambient sounds such as train announcements, and before alighting the PATH train. Some respondents also reported to never take off their headphones.

Table 8.20 Instances People Take Off Headphones When Riding the PATH Train

When People Take Off Headphones	Frequency of Responses and Percentages
At the destination	34 (69%)
After alighting the PATH train	5 (10%)
Upon hearing ambient sound	4 (8%)
Before alighting the PATH train	4 (8%)
Never	2 (4%)
Total responses	49 (100%)

Note: Frequency of responses to the questions "when you alight from the PATH train, when do you take your headphones off?" from 49 on-site surveys.

8.3 Types of Audio Played

Unsurprisingly, the most frequently played type of audio on public transit was music, reported at a frequency of 42% based on a total of 69 interview responses (see Table 8.21). This was followed in frequency by podcasts and videos (and all other visual content). Audio with informational content is played at a frequency of 9%, and this type of audio includes news broadcasts, radio, documentaries, and educational audio content like recorded lectures and book readings. Table 8.20 indicates all types of audio people reported to play and the frequencies at which they were reported. Though phone calls were mentioned only in a handful of responses, upon rather explicitly inquiring from the respondents whether they take or make phone calls on public transit ("how about phone calls? Do you make or answer phone calls on headphones when on public transit?"), 80% of the respondents out of 25 interviewed) stated that they do answer or make phone calls when on public transit. Twenty percent of the respondent reported that they did not.

Table 8.21 Types of Audio Played on Headphones on Public Transit

Type of Audio	Frequency of Responses and Percentages
Music	29 (42%)
Podcasts	15 (22%)
Videos	13 (19%)
Informational content	6 (9%)
Audiobooks	5 (7%)
Phone calls	1 (1%)
Total Responses	69 (100%)

Note: Frequency of responses to the question "What do you listen to on your headphones on public transit?" from 32 in-depth interviews.

Upon investigating the responses of those who admitted to taking phone calls on public transit, it was evident that most respondents admitted to doing so under certain conditions. These conditions are: the importance and urgency of the phone call ("I rarely take phone calls on public transport. If it's like important or somebody like my boss calling, then I take it, otherwise I ignore those calls"); the availability of network or phone signals; whether headphones are already worn ("if they [headphones] are already in my ears, then I'll just answer"); and whether the environment on public transit is conducive to taking phone calls ("I rarely take phone calls because I sit on the quiet car. It's happened once or twice, but it's very rare").

On the PATH train, the type of audio that was played most frequently was music or audio with lyrics (see Table 8.22). This was followed in terms of frequency by podcasts; instrumental music; videos including movies, TV shows, and other video-enabled content; and audiobooks. An interesting form of audio that is played on the PATH train are soundtracks of natural sounds. This includes sounds like water flowing, bird chirping, and wind blowing among others, which were reported at a frequency of 2% (n = 109). This

type of audio was not reported when inquiring about the types of audio played on public transit in general and was reported only when studying the PATH train.

Table 8.22 Types of Audio Played on Headphones on the PATH Train

Type of Audio	Frequency of Responses and Percentages
Music/audio with lyrics	45 (41%)
Podcasts	29 (27%)
Instrumental music/audio	15 (14%)
Videos (includes movies, TV shows, and other video-enabled content)	12 (11%)
Audiobooks	5 (5%)
Soundtracks with natural sounds (like sound of water flowing, birds chirping)	2 (2%)
Other	1 (1%)
Total Responses	109 (100%)

Note: Frequency of responses to the question "What kind of audio do you play on your headphones when you are here?" from 49 on-site surveys gathered on the PATH train.

Though the aforementioned types of audio are most frequently played on public transit, this choice of audio was found (based on the interview responses) to depend on a number of factors. First of many such factors is people's *moods* or what they are feeling. Respondents have to reported to play a certain type of audio when they feel a certain way. "It is what I feel that triggers what kind of music that I choose for that day or time" said one respondent. In line with this, another respondent stated: "so, if there's something new on YouTube, I'll listen to it. Or if a new series comes out on Hulu or Netflix I'll watch that. I'll listen to music if I'm not in a mood to hold my phone."

The type of audio also varies depending on whether a person is *sitting down or standing up* on public transit. Respondents have reported to be playing content that is more engaging when sitting down as opposed to when standing. One respondent stated: "when I am standing, then it's always going to be music because I can't watch a video when I'm standing. The only time that I watch a video is when I'm sitting down, I'm still out in the

public but I'm sitting down. Mainly it'll depend on what I'm doing at the moment that will decide. That is if I'm waiting for the train or sitting down on the train."

The type of audio people have been *previously listening to* prior to being on public transit is another influencer of the type of audio chosen to play. Most respondents, whose choice of audio depended on what they were playing prior to being on transit, reported to play the same after being on public transit. For instance, one respondent stated the following: "if was watching a show in my home then I continue watching the show on transit" while another said: "if I had a podcast I was listening to and if I was not done with it, then I would continue with it."

Curiosity is another factor influencing the type of audio played on public transit. People's curiosity to discover new types audio to play leads them to play different kinds of audio. This could be because (1) they were dissatisfied with the monotony of the audio they have been playing ("[…] sometimes I'm bored of my music and I decide to search for something new"), (2) new audio was released ("[…] if there's a new episode in the podcast that I'm following, I try to catch up on that when I'm travelling"), or (3) new audio was suggested by streaming services ("sometimes I will just play the last thing I was playing. If I'm not in the mood for that, I will go and see what song Spotify suggests for me").

After extended periods of listening to the same type of audio, people sometimes want to invigorate their listening experience by *varying* the audio. As one respondent said, "if I'm not feeling any of my podcasts, then I switch to music."

The *amount of time* that is available for people's disposal on transit also influences the type of audio they decide to play. For instance, if a person remains on public transit for a rather long period of time, they may choose to play audio that is lengthy or more

engaging, like videos or movies as opposed to audio types like music. Two respondents shared the following thoughts in this regard: "[…] if it's a long trip, then I do not listen to music. I'll probably watch videos" said one and "[…] I wouldn't want to start a show just for like a 5-10-minute subway ride, I want to have like an entire, let's say 30-40 minutes to finish one episode" said another.

The type of audio played also depends on the *time of day*. Respondents reported to play audio that "gets the brain working", makes them "thoughtful and introspective", and gets them "ready for the day" during mornings, and audio that helps them "unwind" in the evenings. The different types of audio however cannot be easily classified as those that are played in the morning and those that are played in the evening, because one person may find a certain type of audio to be energetic while the same type of audio may be perceived as relaxing by another person. In addition to hyping up or helping unwind during different times of the day, certain types of audio are also played because these audio may be tied to events that take place during different times of the day. For instance, "in the mornings I would listen to music but in the evenings, particularly between 4-6pm, I listen to audiobooks because I want to know how the Wall Street market was doing."

Network connectivity too plays an important role in the choice of audio. Respondents reported that when there is adequate network connectivity or even a functioning Wi-Fi connection, they often resort to playing videos, as opposed to playing content that consumes little to no data, such as music, during other times.

Lastly, the *type of device* that people happen to be carrying on public transit, plays an important role in the audio choice decision. One respondent stated the following: "[...] when I'm on the Amtrak, most of the time I have my laptop out because it's an hour and a

half journey. So, I tend to listen to music on my laptop and it also makes it easier to watch something if I want. […] I don't like watching things on my phone." This respondent felt encouraged to play videos on their laptop rather than on their phone, which indicates that the type of device available also plays a role in people's choice of audio.

Playing audio, however, is not synonymous with listening to audio. The results of the web survey confirm this. According to the web survey, a majority of the respondents confirmed that they listen to the audio only sometimes, while zoning out during others (see Table 8.23). At the same time, some respondents reported to always listen to the audio, some admitted to almost never listen to the audio, and others admitted to never play audio in the first place on headphones when on public transit.

Table 8.23 People's Listening Behavior When Riding Public Transit

Listening Behavior	Number of Respondents and Percentages
Sometimes pay attention to the audio and occasionally zone out	99 (79%)
Always pay attention to the audio that is playing	17 (14%)
Almost never pay attention to the audio	7 (6%)
I don't play any audio	2 (2%)
Total respondents	125 (100%)

Note: Number of respondents in response to the question "When you are on public transit and you have audio playing on your headphones, do you: sometimes pay attention to the audio and occasionally zone out, always pay attention to the audio that is playing, almost never pay attention to the audio, or don't play any audio?" from 134 online surveys.

The respondents who admitted to not listen to audio, stated two reasons for doing so: (1) being *engaged* in various activities while commuting, so that it takes away attention from the audio playing and (2) being *distracted* by the general happenings of the surroundings.

8.4 Activities People Pursue

People pursue a variety of activities while using headphones on public transit. Several of these activities that were reported in the interview responses are depicted in Table 8.24.

Table 8.24 Types of Activities People Pursue While Using Headphones on Public Transit

Type of Activity	Frequency of Responses and Percentages
Activities involving concentration	18 (44%)
Observing	9 (22%)
Listening to audio	8 (20%)
Napping	4 (10%)
Social interactions	2 (5%)
Total Responses	41 (100%)

Note: Frequency of responses to the questions "When you're on public transit with your headphones on, what sort of activities do you do? from 32 in-depth interviews.

The most frequently reported activities were those involving *concentration* (see Table 8.24). This includes using social media, checking emails, texting, browsing the internet, playing games, coding, reading and other such activities that require a certain degree of concentration. This was followed in frequency by *observing*, with respondents stating that they "just look out the window" when using headphones on public transit. Respondents also reported to be *listening* to audio when on public transit, usually immersed in a variety of audio types including music, videos, Netflix, and movies. N*apping* is also taken up by respondents. One respondent who admitted to nap on transit with headphones on stated the following: "[…] in the few cases I took a longer bus, I travel between home and school and that usually about an hour's ride, when I was doing that I may not read for the entire ride, I may just try and take a nap. But I keep headphones on for that." Lastly, respondents have reported to engage in *social interactions* on public transit with their headphones on. Though interacting with people seems like the type of activity that people

would refrain from pursing when using headphones, several respondents stated to do so nevertheless. For instance, "if there's nice people around me and they want to talk, I talk to them back, but like I rarely start a discussion" said one respondent.

On the other hand, when using headphones on the PATH train in particular, it was reported that people engage in 11 types of activities (see Table 8.25).

Table 8.25 Types of Activities People Pursue on the PATH Train and Whether They Play Audio, Not Play Audio, Listen to Audio, or Not Listen to Audio While Pursuing These Activities

Activity	**Playing Audio**	**Not Playing Audio**	**Playing Audio and Listening to It**	**Playing Audio and Not Listening to It**	Total Responses
	Frequency of responses in each category and percentages				
Using social media	-	-	12 (86%)	2 (14%)	14 (100%)
Communicating	1 (8%)	-	2 (15%)	10 (77%)	13 (100%)
Reading	-	3 (25%)	1 (8%)	8 (67%)	12 (100%)
Observing	1 (10%)	-	7 (70%)	2 (20%)	10 (100%)
Playing games	1 (13%)	1 (13%)	5 (63%)	1 (13%)	8 (100%)
Contemplating	-	1 (14%)	2 (29%)	4 (57%)	7 (100%)
Writing	-	-	1 (33%)	2 (67%)	3 (100%)
Shopping online	1 (100%)	-	-	-	1 (100%)
Meditating	1 (100%)	-	-	-	1 (100%)
Napping	-	-	-	1 (100%)	1 (100%)
Drawing	-	-	1 (100%)	-	1 (100%)

Note: Frequency of responses to the questions "What activities do you pursue on the PATH train while you have your headphones on? And "For these activities listed above, state whether you are playing audio, merely wearing headphones and if you are playing audio, whether you are paying attention to the audio or not, while doing these activities" from 49 on-site surveys.

Even though people use headphones while pursuing the aforementioned activities on the PATH train, it is possible that people may not be playing audio at all, or even if they were, may not be listening to the audio. Table 8.25 above also sheds light on this matter, specifically indicating whether people play audio or not, and if playing, whether they listen

to it or not, while pursuing these activities. For instance, engaging in social media is the most frequently pursued activity with 14 responses (n = 14) reported. These respondents engage in social media on the PATH train while listening to the audio at a frequency of 86% (n = 14). However, at a frequency of 14% (n = 14), respondents do not listen to the audio playing while engaging in social media (see Table 8.25).

8.4.1 Effects of Activities on Other Aspects of Headphone Use

Upon investigating whether the type of activity pursued on public transit impacts the type of audio played on headphones, it was discovered, that for a majority of 70% respondents out of a total of 30 interviewed (n = 30), the activity did not inform the type of audio. For these respondents, it was not the activity that was being pursued, rather, a range of other factors that informed their choice of audio. First such factor is whether people were *sitting or standing* on public transit. In the words of one respondent, "if I'm not sitting, I'll listen to something different than when I'd be sitting or maybe not listen at all. Generally, 99% of the cases, I don't stand and listen to music because I need to be aware of my surroundings. I may have my headphones on, but I may not be listening to music. Or I would have my headphones on, no music playing, but I'll have them on. I'll have them on in any case when I'm entering a train." The type of audio played was also reported to depend on people's *moods*. "[…] But a more significant determinant is my mood. If I feel like listening to music, I do. If not, I'll listen to something else" said a respondent.

The nature of the *public sound environment* is another influencer of the type of audio played. In this regard, one respondent stated the following: "[…] If I'm going to New York to study, I usually focus on what I'm thinking. Then I need something less melodious, less noisy. If there's a loud clanging sound that I'm hearing from the train or a baby crying

or teenagers yelling or howling, then I would change my music to a louder sound, a sound that is more intense than my RnB slow jams. […] That'll be the only time I would change my music to anything with loud drums or something."

The following statement by a respondent indicates that the *purpose of travel* also plays a role in the choice of audio: "it depends on what I'm travelling for, that would affect what I'm listening to. So, if I'm going to meet some friends I'm probably listening to some relaxing or chill music. If I'm going for an appointment or if have some experiment to run, or if I have an interview or something, then I would listen to a different type of music to put me in that mental space."

Time of day was also reported to affect the choice of audio played on public transit. Lastly, several respondents reported that for them, the choice of audio was not informed by any of the aforementioned factors simply because they play the same audio regardless of circumstances. Their choice of audio was *consistent* across various spaces and instances.

Though the aforementioned pertain to a majority of the interview respondents, 30% (n = 30) of them admitted that the type of activity engaged in did inform the type of audio played on headphones when on public transit. For instance, when napping, people have reported to play audio that is "lowkey", "quiet", "not rowdy" ("if I'm sleeping, I want something that helps me sleep so not anything loud or rowdy"); and audio more engaging when resting or comfortable ("if I'm in a comfortable position where I can sit, then I will be watching a video. But if I'm not comfortable, then I might not watch a video"). Respondents have also reported to play audio that is calm or slow when engaging in activities that require concentration, like reading, as opposed to when simply browsing the

phone or even texting ("if I'm reading an article or a book, I would tend to listen to, instrumental or slow music that doesn't distract me as much. But if I'm not doing anything in particular, or just like texting or something, then I would listen to more different types of music, like faster music").

Further, it was revealed by a majority of 47% of the respondents out of a total of 30 that were interviewed (n = 30) reported that there were no differences in their decision to play audio based on their activity, particularly, whether they were seated or standing (see Table 8.26). However, 37% (n = 30) of the respondents admitted playing audio more frequently when they were seated. This is for two reasons. First, because people feel the need to be attentive and *alert towards the environment* around them on public transit, especially when standing. "I play audio more often when I'm sitting down. Standing makes me paranoid, I want to know what's happening" and "I'm more likely to play audio if I'm sitting down. […] Another reason is because if I was standing up people would probably be walking around me. I want to be more alert so I can get out of people's way" said two respondents in this regard. Second is the *comfort and convenience* factor associated with being seated. Being seated makes it convenient for people to connect headphones and play audio. Being seated also eliminates the need for people to hold on to something in order to balance themselves when transit begins to move, leaving their hands to be free and able to play audio. "I play audio mostly when sitting down. Because I feel pretty much accessible and comfortable. Because if you stand then you have to hold and sometimes you can fall off, so it's a bit uncomfortable" elaborated one respondent. On the other hand, 13% (n = 30) respondents stated that they play audio when they were standing (see Table 8.26). The reason for doing so is so that they would be distracted by the general discomfort associated

with standing or commuting in general. One respondent stated, “I play audio more when standing up. Because if I’m sitting down, there's a chance I would not listen to something, but if I’m standing up, it's definitely much more. I want a distraction. I want to think about something else because I'm miserable being on public transit.”

Table 8.26 Playing audio on Headphones vs. Sitting/Standing on Public Transit

Position in Public Transit	Number of Respondents and Percentages
Sitting	11 (37%)
Standing	4 (13%)
Both sitting and standing	14 (47%)
I don’t know	1 (3%)
Total Respondents	30 (100%)

Note: Number of respondents in response to the questions “Do you listen to audio more often when you are sitting down or standing up on public transit? Why is that?” from 32 in-depth interviews.

When investigating whether people’s wearing of headphones without audio playing could be associated with the activities they pursue, particularly whether they were sitting or standing, it was discovered that a majority of respondents stated that they never wear headphones without audio playing on public transit regardless of their activity (see Table 8.27). However, 32% (n = 19) admitted to wear headphones when standing, 16% admitted doing so when they were both sitting and standing, and 11% admitted doing so only when seated. Two reasons that explain why people wear headphones without audio when sitting or standing in particular were identified. The first is the need to be *aware* and attentive towards people’s surroundings when on public transit and second, for purposes of *relaxing* and “letting go,” which are evident in the following response: “when I'm standing up, it's more of kind of awareness to what's happening around me and when I'm sitting down, it’s like following the relaxing stage of the body. I’m not going to be doing anything, I’m just going to enjoy the fact that I’m sitting down.”

Table 8.27 Wearing Headphones vs. Sitting/Standing on Public Transit

Position in Public Transit	Number of Respondents and Percentages
Sitting	2 (11%)
Standing	6 (32%)
Both sitting and standing	3 (16%)
Never when on public transit	7 (37%)
I don't know	1 (5%)
Total Respondents	19 (100%)

Note: Number of respondents in response to the questions "Do you wear headphones without audio playing more often when you are sitting down or standing up on public transit? Why is that?" from 32 in-depth interviews.

8.5 Effects on People's Experiences

In an overarching sense, people's experiences of using headphones on public transit when playing audio, listening to audio, and when not using headphones at all could be understood in terms of five elements: their mood, degree of enjoyment, level of awareness of surroundings, tolerability, and how fast people experience time go by. One hundred and twenty-two respondents (n = 122) rated each of these elements in the web surveys, based on a five-point Likert scale as depicted in Table 8.28. The results are depicted in Table 8.29 and Figure 8.1.

Table 8.28 Experiences and Likert Scale Values

Experience	Rating
Mood	1 = not good at all, 5 = very good
Degree of enjoyment	1 = not safe at all, 5 = very safe
Level of awareness	1 = not aware at all, 5 = very aware
Tolerability	1 = not relaxed at all, 5 = very relaxed
How fast time goes by	1 = very slow, 5 = very fast

As depicted in Table 8.29 and Figure 8.1, all five types of experiences improved when people were listening to audio on headphones as opposed to just playing audio. Also, each of the five types of experiences drastically worsened when respondents were not using headphones at all on public transit compared to when respondents were listening to audio. For instance, respondents' moods improved by 5%, based on the average ratings of 122 online surveys (n = 122), when they began to actively listen to the audio, as opposed to when just playing audio and not expending any cognitive effort towards it. The mood deteriorated by 23% (n = 122) when respondents completely removed their headphones, compared to when they were listening to audio. Degree of enjoyment, level of awareness of surrounding, tolerability, and how fast time goes by also experience a similar trend: these types of experiences improved when respondents listen to audio and declined when they do not use headphones on at all (see Table 8.29).

Table 8.29 People's Experiences of Being on Public Transit When Playing Audio, Listening to Audio, and Not Using Headphones at All

Experience	Play Audio	Listen to Audio	No Use of Headphones at All
	Average rating out of 5.0 and the improvement (positive percentages) or decline (negative percentages) in experiential elements when playing audio, listening to audio, and not using headphones at all N.B. "△" depicts change		
Overall experience	3.7	3.9 (△4%)	2.6 (△-26%)
Mood	3.7	3.9 (△5%)	2.8 (△-23%)
Enjoyment	3.6	3.9 (△5%)	2.5 (△-27%)
Awareness	3.4	3.7 (△5%)	2.8 (△-16%)
Tolerability	4.0	4.1 (△3%)	2.7 (△-28%)
Passage of time	3.9	4.0 (△3%)	2.3 (△-34%)

Note: Rating are in response to the questions "How would you rate your experience of being on public transit in terms of the following parameters, when you have audio playing on your headphones: how good was your mood, how much did you enjoy your ride, how aware were you of your surroundings, how tolerable was your journey, and how fast did the time go by?" from 122 online surveys.

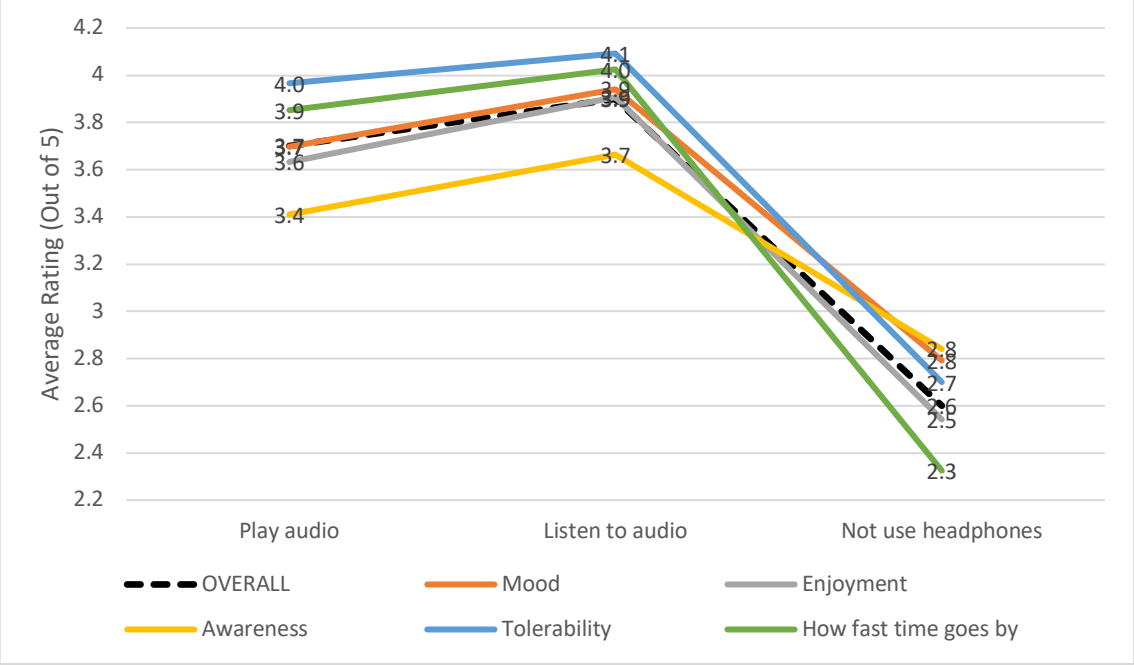

Figure 8.1 People's experiences of being on public transit when playing audio, listening to audio, and not using headphones at all.

The overall experience of being on the PATH train when people were playing audio and listening to audio remained the same, at a rating of 3.8 out of 5.0, are depicted in Table

8.30 and Figure 8.2. The overall experience, however, dropped to a rating of 2.8, a decline of 20%, when people did not use headphones at all compared to when they did. People's mood followed a similar trajectory to the overall experience. People's moods were reported to remain the same when listening to audio, similar to when just playing audio, and was reported to decline when no headphones were used. Though the overall experience worsened when people did not use headphones on the PATH train, not all the experience types followed a similar worsening trend when people did not use headphones. For instance, the degree to which people were aware of their surroundings reduced by 3% when people were listening to audio as opposed to when just playing without expending any cognitive effort, and improved when headphones were not in use at all. Quite unexpectedly, a reduction of 11% in the level of tolerability of the PATH train was reported when people were listening to audio compared to when they were just playing. It was anticipated that the degree to which the PATH train would be tolerable would increase when people were listening to audio as opposed to just playing, as listening would take people's minds off of the train.

Table 8.30 People's Experiences of Being on the PATH Train When Playing Audio, Listening to Audio, and Not Using Headphones at All

Experience	Play Audio	Listen to Audio	No Use of Headphones at All
	Average rating out of 5.0 and the improvement (positive percentages) or decline (negative percentages) in experiential elements when playing audio, listening to audio, and not using headphones at all N.B. "△" depicts change		
Overall experience	3.8	3.8 (0%)	2.8 (△-20%)
Mood	4.0	4.0 (0%)	2.7 (△-27%)
Enjoyment	3.7	4.1 (△8%)	2.5 (△-33%)
Awareness	3.3	3.2 (△-3%)	4.2 (△21%)
Tolerability	4.0	3.5 (△-11%)	2.7 (△-16%)
Passage of time	3.8	4.1 (△6%)	2.3 (△-39%)

Note: Rating are in response to the questions "How would you rate your experience of being on this train in terms of the following parameters, when you have audio playing on your headphones: how good was your mood, how much did you enjoy your ride, how aware were you of your surroundings, how tolerable was your journey, and how fast did the time go by?" from 49 on-site surveys.

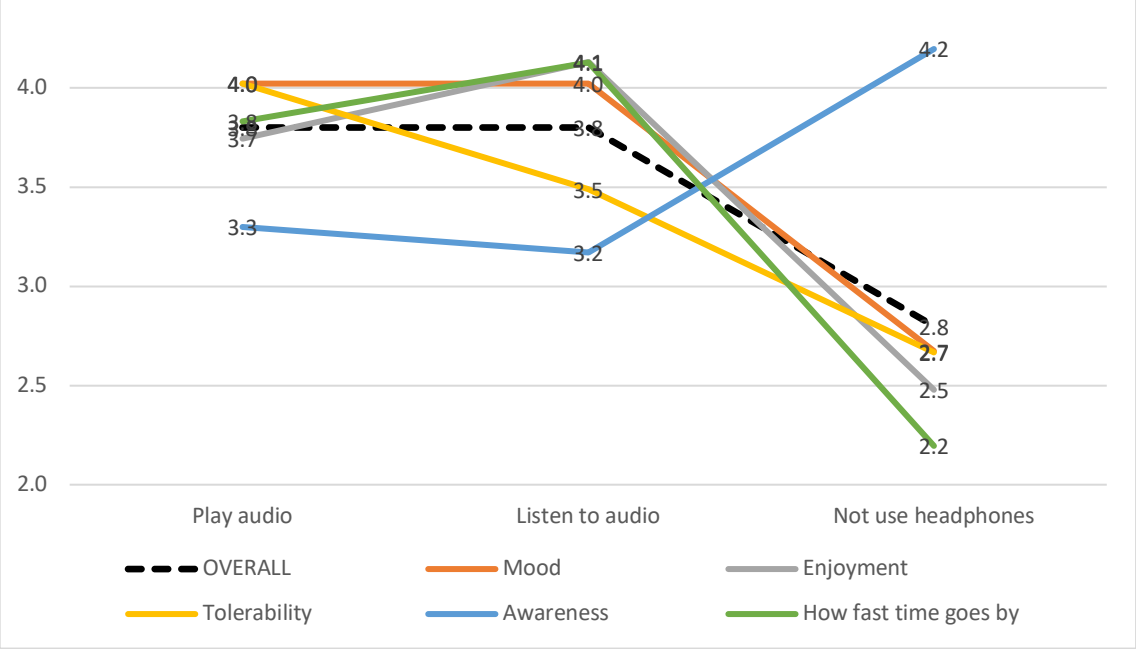

Figure 8.2: People's experiences of being on the PATH train when playing audio, listening to audio, and not using headphones at all.

8.5.1 Experiences When Playing, Wearing, Listening, and Not Using Headphones

Based on the responses from focus groups and interviews, people's experiences on public transit when playing audio can be understood in terms of several factors.

First are people's *moods and feelings,* which were reported to be affected when playing audio, contributing to the experience they have. Playing audio on public transit makes people feel "less stressful", "better", "good", "content", "happier", "comfortable", "calm", and "peaceful." It leaves them "more satisfied" of their journey, and even for some, makes the journey "more enjoyable." Playing audio also "makes huge improvements to mood" for some respondents and enables them to "have a good time without worries."

When playing audio, people experience *feelings of isolation*. Based on the responses received, isolation is something people seek when on public transit and is perceived as something positive. The feeling of isolation as a result of playing audio persists in many ways: respondents feel like they "have their own space/zone/bubble" despite being in a public space and feeling like they are escaping from immediacy ("it's like escapism. Escaping from the moment. Like getting lost in your own head listening to music. You are not on the train anymore you're just in whatever song you're listening to"). Some respondents also reported to feel "like being at home" when playing audio on public transit. In their own words, this feeling is described as follows: "it's like being at home, because you're not paying attention to what's around you. So, it's like if I'm watching YouTube with my headphones on, I can do it on the sofa or on a train. I'm sitting and I'm watching so I'm focused on that."

Playing audio was also found to affect people's ability to *concentrate* when on public transit. In fact, it was reported that this ability to concentrate was enhanced when playing audio. For instance, respondents have stated that they experienced themselves to be less distracted from the surroundings or from the happenings around them as a result of playing audio. This concentration could be useful for when engaging in activities such as

reading, to “focus on one’s own thoughts,” or even just to be immersed in and enjoy the audio. In this regard, one respondent stated: “it [playing audio] distracts me from the loud train sounds. I'm not paying attention to rats running around or how aesthetically hideous New York's public transport actually is. It's convenient, but absolutely hideous and I'm not paying attention to any of that stuff. I'm just enjoying the music.” On the other hand, increased concentration and less distraction by the surroundings leave people feeling vulnerable: “usually with music on, my guard goes down. I have my music on, so I feel kind of vulnerable in a sense where I’m in the train and I have my headphones on, so I’m not wary of my environment.” While some people welcome the ability to concentrate and gather their thoughts by playing audio, other people play audio simply to avoid this concentrating. For these people, increased concentration heightens other cognitive disorders (such as anxiety) and complications, which burdens people to deal with their “internal chaos,” and therefore, they seek to avoid it by distracting their minds by playing audio. The statement by the following respondent elaborates this: “I think it distracts my mind and I really like that idea [playing audio] because otherwise whenever I take the public train, it doesn't matter if I take the train or bus, it makes me feel sick. So, when I listen to something, it helps me not focus on that problem.”

People experience a sense of *belonging* when playing audio on public transit. This could be best explained in the words of a participant: “It feels like there's this community that you're a part of, there are other people who are also commuting and have to go places, or there's this diverse unity where you're a part of it. It gives you the freedom of knowing, I think of it like a community, and it helps me experience that I’m a part of a commuter population. So that helps me to know that I have a choice to be a part of this community

even when I don't want to. Because you're a part of this community then you start to observe groups of people. Being able to experience that even in a small train car like that allows me to know that I'm a part of something bigger." While this respondent experienced the sense belonging towards a larger community, i.e., a commuter population, another respondent experienced the sense of belonging towards the modern tech-culture: "I feel modern, it's [playing audio on headphones] something that's becoming so normal that I feel that I'm not a stranger. Because you see many people are doing the same, so I feel that I'm part of the culture around me."

Playing audio gives people the sense of being *engaged*. It gives them "something to do" in an otherwise monotonous journey. "I feel safe than without having my headphones on. Because what if something happens somewhere, like the train breaks down in the middle of the tracks and you have nothing to do. So, it's a buffer to me, like a contingent rescue plan so I feel safe. Safe in the sense, say for example, there can be situations where the train breaks down for half an hour or there's an emergency situation and the train is just stopped in one place for like an hour and then you'll be like 'ah, wait, I have something to do', and put your headphones on and kill the time. That would be my contingency plan" said one respondent.

In addition, playing audio on headphones contributes to people's experience of public transit by making their trips *tolerable*, *enjoyable*, and *relaxed*. Lastly, playing audio makes the *passage of time* feel differently. Respondents have reported to experience "time go by faster" while some other respondents have been able overcome long-distance journeys by taking their minds off of the distance to be travelled.

Based on a total of 12 interview respondents (n = 12), it was evident that the experiences people have on public transit when just wearing headphones is different from that of when playing audio. This is according to 67% (n = 12) of the respondents. These differences in experience could be described in terms of three factors. First, people become *introspective* and deeply engrossed in their own thoughts. "I tend to get bored more easily. But on the other hand, I think that I tend to be more creative in my thoughts" said one respondent. Second, the degree to which people *enjoy* their journeys decline. Lastly, people become more *observant* and aware of their surroundings. For instance, "if audio was playing, it kind of makes me zone out a little bit more versus if I had my headphones in but I wasn't playing anything, I would still kind of be like in tune with all the other people around me and stuff" said a respondent.

Additionally, it was reported by 88% of the respondents based on a total of 25 interviewed (n = 25), that people's experiences of public transit when they do not have headphones on is different from when they do have headphones on. These differences in experience could be understood in terms of four factors. First, not having headphones on at all changes how people *feel* when on public transit. People have reported to feel "like something is missing" from their experience of public transit, feel "stressful or chaotic", "bored", "miserable", and "easily annoyed." It was reported that the passage of time also felt different to people when headphones were not being used. Second, people experience more *forced interactions* simply because they do not have headphones on to ward off these unwelcome interactions. For instance, one respondent said: "when I don't have headphones on, I've been talked into going to someone's church. That's usually the most frequent thing that has happened to me. If I have my headphones on, I can ignore these people on their

first try and they will give up." Third, people experienced *distractions* or disturbances easily and more often when headphones were not in use because people's ears were more aware to the happenings around them. Lastly, people have experienced that they become more *observant* of their surroundings and notice things that they would not if they had their headphones on. "I sometimes forget my headphones when I'm running out. I feel like I tend to look more at what other people are doing or looking at something" said one respondent and "I scrutinize the aesthetics way more when I'm without headphones" said another.

Though a majority of respondents agreed that their experiences were different when there were no headphones in use, 8% (n = 25) of the respondents believed that their experiences were no different when they did not have headphones on at all. Also, 4% (n = 25) of the respondents remained oblivious and did not comment on this matter.

CHAPTER 9

DISCUSSION AND IMPLICATIONS

For this dissertation, the researcher posed five research questions. The findings to those questions are presented in the three previous chapters: Chapters 6, 7, and 8. This chapter reviews the concept of the private sound environment (PSE) that framed those questions, points out what was leaned about that concept, and what the implications are for future research.

People create their own PSEs by *using* headphones, regardless of whether they are *playing* audio on them or just *wearing* them without playing audio. This researcher is concerned with the microecology of PSEs, and understanding the reasons behind why people create PSEs; instances when people create and deconstruct them; the activities they pursue while immersed in them; whether they play audio or not, and if audio is playing, the types of audio played; and how the creation of PSEs affects people's experiences in public parks and on public transit. To answer these questions, the researcher conducted a series of focus groups, in-depth interviews, online surveys, and on-site surveys.

This dissertation compliments and advances the work of Bull (2000, 2005, 2009), Hagood (2011), Hatuka and Toch (2016), Thibaud (2003, 2012) among others who investigated some of the reasons why people use headphones beyond an instrument for listening. Not only does this dissertation advance their *findings*, it also advances the *understanding* of headphone use by investigating whether people play audio or not when they use headphones. This nuanced and more complete understanding of the creation of PSEs is unique to this dissertation research since it has not been covered in previous studies.

9.1 (Re)Defining the Private Sound Environment

In this dissertation, the concept of PSE is introduced for two reasons. First, it replaces Schafer's (1977) idea of a "soundscape," which in Ari Kelman's (2010) words, "[…] has come to be used casually by people to refer both to the piped-in soundtracks that one can hear in most any public buildings and to the practice of using portable MP3 players to create one's own personal mobile soundtrack. […] In its near-ubiquity, the term [soundscape] has come to refer to almost any experience of sound in almost any context" (p. 214). This is a significantly different understanding from what Schaffer originally meant that a soundscape is (discussed in Chapter 3). Second, the concept of PSE is more precise and formal than the terms that previous researchers have used to describe the personal spaces that headphones create. These terms include a "cocoon" (Bull, 2000), a "mobile home" (Bull, 2000), a "mobile hiding place" (Bloch, 1986) among others. The concept of PSE is less colloquial than these prior terms, semantically accurate, and in line with established theories and concepts in the field of sound studies. In an earlier chapter (Chapter 4), PSEs were defined as personal acoustic spaces created by the use of headphones that enable the individual to be immersed in his or her audio and thereby be separated in non-physical ways from the immediate surroundings. This definition implies that a PSE must always consist of audio playing. The question then is if a person wears headphones without any audio playing, could it be still said that this person is inhabiting a PSE?

Findings from this research suggest that in order to be deemed a PSE, personal acoustic spaces need not always consist of audio. One could argue that when there is no audio playing, what the user hears is nearly identical to the public sound environment, thus

invalidating the existence of a PSE under those conditions. However, what differentiates a PSE from its public counterpart, the public sound environment is not only the differences in the types of sounds that are heard, but also in their intensities. The act of wearing headphones itself diminishes the intensities of the sounds of the public sound environment.

Findings from this research suggest a PSE is also a 'state of mind' and can even be symbolic. That is, by putting headphones on regardless of whether audio is playing or not, people assume a mindset that creates a separation from their surroundings. A PSE is symbolic in the sense that wearing headphones serves as a cue to those around the headphone user that he or she are no longer participating in the public sound environment, hence is socially and physically unavailable.

A PSE can consist of: (1) audio that the headphone user chooses to play (2) no audio playing at all, or (3) almost complete silence (by using headphones that block out all sounds from the surrounding environment). This newfound understanding of a PSE, i.e., whether there is audio playing or not prompts a discussion of the permeability of these PSEs.

9.2 Permeability of Private Sound Environments

Permeability is an important characteristic of PSEs. PSEs are most permeable when people wear headphones without playing audio and are less permeable when people play audio. Even when people play audio, the permeability varies depending on whether they *listen* to the content with attention (permeability is low) or just *hear* the content in the background (permeability is high). In other words, the distinction between listening and hearing plays an important role in determining how permeable a PSE is. In the past, different scholars

have classified 'listening' in different ways. Pierre Schaeffer (1966) distinguished listening from receiving, hearing, and understanding; Barry Truax (1984) distinguished between listening-in-search, listening-in-readiness, and background-listening; and Jean Paul Thibaud (2012) questioned how and under what conditions do people move from one type of listening to another – a question that this dissertation attempted to answer to some degree. However, when people listen to audio, this does not mean that a PSE is completely impermeable. This is because complete impermeability cannot be attained with the current technologies of headphones, and in order to attain complete permeability, one must refrain from using headphones altogether. By that definition, PSEs are always permeable to some degree. In addition to whether people listen or hear, other factors that influence the degree of permeability emerged from this dissertation's findings. These are discussed.

The degree of permeability of PSEs varies based on people's level of concentration. For instance, people deliberately reduce the permeability when they need to pay attention to other things besides the audio, like watching for their stop when on public transit, responding to texts/emails/phone calls, and interacting with strangers. In some other instances, PSEs even cease to exist momentarily, for instance, if people take off their headphones while attending to other matters. Such circumstances that modify or breach the permeability of people's PSEs are referred to as "sonic parasites" by Thibaud (2003). According to Thibaud (2003), some ways of navigating sonic parasites are rewinding and listening to audio again; turning up the volume; or resigning, waiting it out, and beginning listening once circumstances get better. Despite the negative connotations the term sonic parasites bears, this study's findings suggest that they can sometimes be useful and can even contain information that is of value to headphone users, like announcements on trains.

The type of audio people play also affects the degree of permeability of PSEs. Some types of audio, especially those that engage senses other than hearing - such as videos which are also visually engaging - provide a more immersive experience than content that engages a single sense - such as music, podcasts, or audiobooks. This means that people who watch videos while listening to its audio are immersed in a more impermeable PSE compared to people who are listening to only music, podcasts, or audiobooks.

In addition, the way in which headphones are used, that is whether people use headphones with both earpieces in ears or only one earpiece in ear affects the degree of permeability of PSEs. The permeability is high when only one earpiece is in use and the permeability is low when both earpieces are in use.

Last, the types of headphones people use and the features of those headphones determine the permeability of PSEs. Some types of headphones provide a more permeable immersion than others. For instance, earbuds tend to be more permeable than over-ear headphones. At the same time, particular features of some headphones create a less permeable and more immersive experience than others. For instance, noise cancellation headphones create a nearly impermeable listening experience by cancelling or reducing external low frequency sounds.

9.3 Types of Headphones Used

An understanding of the types of headphones people use in parks and on transit is important not only for purposes of understanding the permeability of people's PSEs, but also for the benefit of manufacturers to learn about people's thought processes and reasons for choosing certain types headphones over others. Such an understanding could provide

critical information for manufacturers looking to improve their products or invent new ones.

People's choice of the kind of headphones to use in parks and on public transit is a conscious decision that often varies based on a number of factors. The activities that people engage in while in parks and on transit influence the type of headphones used. This dissertation shows that in parks, the key factor is whether the activity pursued is a *moving or sedentary* one. Findings from this dissertation indicate that people are inclined to use headphones that are smaller in size when they are moving around in parks and on transit. This is in contrast to when they are stationary, which is when they tend to use bulky headphones such as over-ear or on-ear headphones. Findings also reveal that people favor wireless headphones when they are on the move as opposed to when they are stationary. This is because wireless headphones allow more flexibility and make certain movements easier than wired headphones. On public transit in particular, it is the activities people intend to engage in *post-transit* that determine headphone type. In fact, the activities people pursue on public transit often have almost nothing to do with their choice of headphones. Rather, the activities people plan to engage in subsequently after alighting from public transit is what influences the type of headphones they use while on public transit.

The *design* of headphones i.e., whether the headphones are wired or wireless also influences people's choice. The *quality of the listening experience* and *the degree of immersion* are also factors that influence the choice of headphone types. Some people prefer to suppress the loudness of the public sound environment of both parks and public transit, while others may want to be aware of the happenings around them. Depending on the degree people wish to be immersed in their PSEs, or in other words, separated from

their surroundings, the types of headphones used vary. Over-ear headphones are typically preferred because they provide a more complete and uninterrupted listening experience. In addition, over-ear headphones create a more immersive PSE that is almost impermeable, sonically separating people from the happenings in the surroundings.

Another factor that influences the type of headphones is *convenience*. That includes how convenient it is to transport certain types of headphones in actuality (or people's *ability* to transport them), as well as people's willingness to carry certain types of headphones with them. Typically, it is more cumbersome to transport bulky headphones such as on-ear or over-ear headphones. However, if people deem transporting them to be easy depending on their ability and willingness, people choose on or over-ear headphones to be used in parks and on transit. The final factor influencing the type of headphones, particularly on public transit, is the *battery life* of headphones.

9.4 Thresholds for Using Headphones

People's choice of when to begin using headphones and to discontinue using them indicates that the environment has thresholds that allow them to transition from the public realm to the private and vice versa. These thresholds can be defined both in terms of changes in physical access to public realm from the private and vice versa, and changes in perceptual orientation. Thresholds defined in terms of physical access refer to places in the physical environment where people begin using and discontinue using headphones thus creating or deconstructing a PSE. The findings indicate a variety of such physical thresholds pertaining to headphone use in parks and on transit, the most common being people's homes. Thresholds in terms of changes in perceptual orientation occur when people put

headphones on regardless of whether they play audio, as it transports them to a different perceptual or cognitive state than they were before. While the findings of this dissertation are less indicative of instances of perceptual thresholds compared to physical ones, several instances of such perceptual thresholds were nevertheless reported: a respondent in a focus group stated that "if I'm at home, in the garage, that's when I'll put them [headphones] on. I feel like I have just gotten out of the house and whoever is in the house, they are still there. But I'm now away from them, and I'll put them [headphones] on and walk to the park." Physical and perceptual thresholds may or may not overlap with each other.

The idea of thresholds also appear in the work of Thibaud (2003). According to him, sonic thresholds between the public and the private realms exist in three forms: doors, bridges, and interchanges. Doors serve as a transition between two places of distinct status, and between two kinds of listening. Thibaud says it is paradoxical that entering public space is associated with the beginning of private listening and vice versa. This was confirmed in the findings of this research: most people reported to putting headphones on when leaving their homes and stepping out into the world.

Sometimes transitions to a different realm are not abrupt. As a result, in such cases, thresholds act like "bridges" that extend from one realm to another (Thibaud, 2003). Several instances of bridges were reported in this study. Playing music on the phone as one departs one's house, then allowing the Bluetooth speakers in one's personal vehicle to take over and play music, and finally putting on headphones when alighting from the car so that the music played in the car can be continued is an example of sonic bridges reported in this study. In this case, the automobile still remains a private space, but serves as a bridge that aids people transition from their private homes to public parks or transit.

9.5 Acoustic Expectations of People

The findings of this study can also be useful for urban planners and designers because they give insights into people's acoustic expectations of parks and transit spaces. This can be useful to plan and design better public spaces or to improve the conditions of the existing ones.

According to the findings from the on-site surveys, people's acoustic expectations for Washington Square Park are three-fold. First, people expect there to be live music, including jazz and classical music, and performances by artists more frequently than at present. Second, people wish to hear fewer sounds of one kind and third, more sounds of other kinds. Sounds that people wish to hear less are other people's chatter, especially those of large groups of people, yelling, sounds projected from other people's speakers, loud tumultuous bands, sounds of vehicles, and construction noises. Sounds people wish to hear more frequently are light chatter, laughter, and other natural sounds.

People's expectations for Tompkins Square Park are not very many. In fact, respondents stated that their only expectation is that other people do not play their audio out loud. The only acoustic expectation respondents have for Madison Square Park is that they hear certain kinds of sounds less frequently, much like in Washington Square Park. These sounds are children crying, loud and unpleasant people, construction sounds, traffic sounds, and sirens.

With regard to the PATH train, people expect the train to be quieter than it presently is. Quietness extends beyond the mechanical loudness of the train to include noise from passengers' chatter and passengers' audio that is sometimes played out loud. People also

expect there to be better signal connectivity in order for them to have a continuous and uninterrupted listening experience, though the feasibility of achieving this is questionable. Lastly, people wish the announcements on the PATH train be louder and clearer.

9.6 Effects on Non-Users

The findings from this research reveal that the use of headphones affects not only those who use them. When people have headphones on, it discourages non-users from approaching or interacting with them. It also reduces the possibility for casual conversations. People become irritated and annoyed by headphone users. This is especially when the audio on headphones is playing at a high volume resulting in it to bleed out or when headphone users use open-back headphones. Weber (2010) refers to this phenomena as "disrespectful listening." Schönahammer (1988) claims that non-users' annoyance is mostly a response to having to listen to the "acoustic garbage" of someone else's PSE. In particular, Schönahammer (1988) studied how Walkman users were perceived by people, revealing that they often felt annoyed as a result of the non-reciprocity of Walkman use - in other words, the discreetness of private listening. This is much like wearing sunglasses where one can see but cannot be seen, or the auditory equivalent to Hatuka & Toch's (2017) notion of "asymmetrical visibility."

9.7 Revisiting the Suitability of Study Sites

The findings of this dissertation warrant a review of the criteria used for site-selection. The sites chosen are very different types of urban public spaces - public parks and public transit - a choice inspired by the classifications of public spaces developed by Walzer (1986) and Bull (2000). According to them, parks are "open-minded" (Walzer, 1986) and "freely chosen" (Bull, 2000) spaces whereas transit spaces are "single-minded" (Walzer, 1986) and "routine" (Bull, 2000), making them characteristically opposite types of places.

The findings of this study raise questions about these classifications. Based on some of the focus group and interview responses, it seems that parks, that Bull characterizes as "freely chosen" spaces, do not appear to be freely chosen spaces for all people. This is because some respondents reported that they go to parks out of routine rather than choosing to go there. A possible reason for this deviation in responses from established classifications comes from the work of Thibaud (2003). According to Thibaud (2003), people decompose preexisting territorial structures of the city and recompose them through a spatio-phonic lens. This means that people may reclassify spaces based on their auditory experiences there. They do so by breaking down existing boundaries of the private and public and reestablishing them and sometimes even redefining them in ways that have not previously been done (Weber, 2010).

This reconceptualization of public spaces points to several implications. First, perhaps a different kind of classification of public spaces is needed when auditory experience is concerned. Second, that "one size (or definition) fits all" does not apply to all public spaces. And third, that Walzer's and Bull's classifications of public spaces do not overlap and correspond to the same types of spaces as this researcher originally thought.

In other words, "single minded" spaces may not necessarily be the same as "routine" spaces. The same could be said for open-minded spaces – that they may not necessarily be freely chosen spaces.

9.8 Topics for Future Research

During the 1960s, headphone enthusiasts and users were predominantly men (Weber, 2010). The reason for this disparity in gender was attributed to beauty standards as women did not want to use bulky headphones with heavy headband designs that would interfere with their elaborate back-combed hairstyles of the day (Weber, 2010). While today's beauty standards do not deter women from using headphones, still, a majority of headphone enthusiasts and audiophiles are observably men as evident in the multiple social media groups that exist online (such as on Facebook). Existing research also suggests an imbalance in the gendered differences in the use of headphones. While this dissertation hints on one gendered difference: that women hold personal safety to a high level resulting in their not using headphone in certain public places at night, a more complete investigation about possible gender differences would be useful.

There is also absence of research about age differences in headphone use. This dissertation did not address such possible differences. An understanding on this topic could be pursued in future research to provide interesting insights.

Over the last five decades, marketing strategies of headphones saw a significant change. In the 1960's, headphones were marketed by advertising that when using them, users would not disturb others' peace, a notion Weber (2010) referred to as "respectful listening." For several years after that, headphones companies marketed their products by

referring to the personal, immersive listening experience they provide that previous marketing campaigns had overlooked. More recently, in 2019, products like Bose Frames for instance, began promoting "discreet" listening - "you hear rich, immersive sound, while others hear practically nothing" (Bose Corporation, 2019b). These changes in advertising raise several questions that warrant further research. Why did listening discretion emerge over the past few years? Did this discretion emerge as a part of the progressive development of the material culture, or the physical design of headphones? In other words, did headphones, perfect its physical self and quality of the private listening experience and in order to still remain competitive and relevant in the market, introduce discretion as a "value'?

The final suggestion for future research arises from the research methods adopted for this dissertation. One significant shortcoming lies in the method used to collect data on people's behaviors and experiences. The responses in the in-depth interviews indicated that people are not always aware of their behavior related to headphone use. For instance, when asked during the in-depth interviews, "would you say you begin listening to the audio as soon as you turn it on? Could you tell me more about that?," some people responded that they had never thought about such unconscious behaviors. This may have led to some exaggeration or fabrication in responses because certain behaviors may have taken place unconsciously without people even knowing it. This is a shortcoming of self-reported data. In addition, questions capturing people's experiences such as the following that was posed in the in-depth interviews - "how do you experience a park when you are listening to audio on headphones?," are at risk of not capturing accurate responses. According to Schönahammer (1988), verbally reported human experiences do not give a

phenomenological description in a complete way. He states that verbally reported experiential data present a paradox: to grasp the experience researchers typically rely on verbal data even though they, more often than not, denature the first-hand sensory experiences. This may be the most serious shortcoming with the experiential questions posed to respondents in this dissertation, because as Schönahammer (1988) affirms, statements made by respondents about their experiences are often mistaken for the experience itself. This reinforces the need for the use of more objective means to collect data on behavior and experiences such as the use of physiological sensors, which prior research (De Silva et al., 2017) have proven to effectively and objectively measure people's experiences in public spaces by using skin response and heart rate sensors.

APPENDIX A

FLYER FOR FOCUS GROUP RECRUITMENT

Appendix A contains the flyer that was used to recruit participants for the focus groups. This flyer, which was IRB-approved was displayed in public places in the NJIT campus such as the Van Houten Library, the Campus Center, and the bookstore, as well as in public places near the NJIT campus such as at the NJIT/Rutgers shuttle stop on Warren Street and at the Warren Street Light Rail station.

IRB: F005-20

USE YOUR HEADPHONES ALL THE TIME?
THEN THIS STUDY MIGHT INTEREST YOU!

PARTICIPATE IN A RESEARCH STUDY ON YOUR USE OF HEADPHONES

BE A PART OF APPROXIMATELY AN HOUR LONG FOCUS GROUP DISCUSSION ALONG WITH OTHER FELLOW HEADPHONES USERS TO HELP THE RESEARCHER UNDERSTAND THE 'HEADPHONES CULTURE' IN PUBLIC SPACES

●

You are eligible to participate in the study if you:

- are 18 years or older
- are an NJIT student
- have used headphones (or any of its variants including earphones, earbuds, AirPods or anything similar) during the past two weeks in a public park and on a train
- been by yourself in these parks and on trains while using headphones (or its variants)

●

If interested, please email csd24@njit.edu to secure a spot!

Snacks and drinks will be provided!

APPENDIX B

HANDOUT FOR FOCUS GROUP RECRUITMENT

Appendix B contains the IRB-approved handouts that were used to recruit participants for the focus groups. These handouts were handed out in the NJIT Campus Center to students who appeared to be using headphones.

Hello!

Are you an avid user of headphones who can't go a day without them? Then please continue reading, for this might interest you!

I am looking to recruit NJIT students who use headphones for an approximately hour-long (not more than that, I promise!) focus group discussion to understand your use of headphones in public spaces.

All you need to qualify to participate is to:
- be 18 years or older,
- be an NJIT student, and
- have used headphones (or any of its variants including earphones, earbuds, AirPods or anything similar) in a public park and on a train that you visited by yourself during the past two weeks.

If you meet these three criteria and would like to be a part of this discussion which I'm conducting for my doctoral dissertation, please email me on **csd24@njit.edu** to reserve a spot.
Snacks and drinks will be provided ;)

Feel free to pass the message to your headphone-using friends at NJIT. Those who make successful referrals will receive a **gift** upon your referee's participation in the discussion;
Just ask your referee to mention your name in the email they send me!

APPENDIX C

PROTOCOL FOR FOCUS GROUP INTERVIEWS

Appendix C contains the questionnaire followed during focus groups. Each focus group consisted of three to four participants and lasted for about 45 to 60 minutes. These were conducted over the course of one month. In total, four focus groups were carried out. With the campus-wide lockdown imposed early-March 2020, the focus groups could no longer be conducted, and hence were ceased.

Welcome. Thank you for agreeing to participate in my research. The purpose of this group interview is for all of you to tell me about your use of headphones in public spaces. There are no right or wrong answers. This is the first phase of my research and I am keen to find out, in a very open-ended way, about people's use of headphones and their experiences of using them. I am very glad for you to volunteer anything you think I should know, even if it is not in response to a particular question I pose as I really need to learn from you. It is best if this becomes a kind of group discussion, where people can respond both to my questions and to comments or answers other people give. I want you to know that you are under no obligation to answer every single question I ask, and I want to remind you that should you feel the need to discontinue your participation in this interview at any time, even after we have begun, you are very welcome to do so. In order to have a record of our conversation, I would like to record our discussion. Your responses will be used solely for academic purposes and your names will never be used. Confidentiality will be maintained at all times. Before we start, do you have any questions for me?
Let us now begin.

1. When do you usually use headphones? (*probe – while walking, in school, at home etc.)*
    a. Why do you use headphones in these instances?
2. Do you use different kinds of headphones in different situations?
    a. What is this choice based on?
3. What are some of the instances that you would never use headphones, of if you already are, would consider taking them off?
4. What sort of activities do you do when you have your headphones on?
5. What do you think would happen if you had to stop using headphones altogether?

My next set of questions are about using headphones in public parks.

1. How often do you use headphones in a park?
    a. What encourages you to use headphones at those particular times?
    b. How does using headphones in a park make you feel?
        i. Do your feelings vary according to what activity you are pursuing, or according to what park you are in? Can you tell us about that?
2. When you are using your headphones in a park, what kind of audio do you play on them?
    a. Do you always play the same type of audio in parks? If not, how does that vary?
    b. How often do you have audio playing on headphones in a park – all the time, most, or just sometimes?
        i. What makes you decide not to have any audio playing when you are in a park?
    c. How often do you <u>listen</u> to the audio that is playing on your headphones – all the time, most, or just sometimes?

            i. What are some of the reasons that you may not be listening to the audio playing?
    3. What kinds of headphones do you own?
        a. How do you decide which of these to use when you are visiting a park?
    4. What activities do you do when you are in a park?
        a. What makes do you decide if you want to use headphones while doing these activities?
    5. When you go to a park, at what point do you put your headphones on?
        a. What encourages you to do so?
        b. Have there been times when you took your headphones off or stopped/paused the audio after coming into a park?
            i. If so, why did you do that?
    6. When you have headphones on in a park, how do you think that affects your experience of the park?
        a. Do you think this experience is different from being in a park and not using headphones?
            i. If yes, how is it different?
        b. Do you think this experience is different when you are actually listening to the audio that is playing and when you are not listening but still have them playing?
            i. If yes, how is it different?
    7. Do you think that when you use headphones in a park, this affects people near you?
        a. If yes, who do you think it affects them?
    8. Is there anything else you can tell me about your use of headphones in parks?

Now I would like to talk about using headphones on public transit.

1. How often do you use headphones on trains?
    a. What encourages you to use headphones at those particular times?
    b. How does using headphones on trains make you feel?
2. When you are using your headphones on trains, what kind of audio do you play?
    a. Do you always play the same type of audio on trains?
    b. How often do you have audio playing on them – all the time, most, or just sometimes?
        i. Could you tell me why you may wear the headphones without any audio playing?
    c. How often do you listen to the audio that is playing on your headphones?
        i. What are some of the reasons that you may not be listening to the audio playing?
3. Out of the different kinds of headphones you own, how do you decide which of these to use when you are on a train?
4. What activities do you do when you are on a train?
    a. What makes do you decide if you want to use headphones while doing these activities?
5. When you take a train, at what point do you put your headphones on?

    a. Why do you do so?
    b. Have there been instances that you took your headphones off or stopped/paused the audio after coming into a train?
        i. If yes, why did you do that?
6. Could you describe your experience of being on the train when you have your headphones on?
    a. Do you think this experience is different from being on a train and not using headphones?
        i. If yes, how is it different?
    b. Do you think this experience is different when you are actually listening to the audio that is playing and when you are not listening but still have them playing?
        i. If yes, how is it different?
7. Do you think your using headphones on a train affects the people around you?
    a. If yes, why do you think so?
8. Here is my last question. Is there anything else you can tell me about your use of headphones on trains?

APPENDIX D

PROTOCOL FOR IN-DEPTH INTERVIEWS

Appendix D contains the questionnaire used during the in-depth interviews. Each interview lasted 30 to 45 minutes and were conducted either through a phone call, a Skype call, or a Zoom call according to the participant's preference. In total, 58 interviews were conducted over a period of a month and half, which came to an end by the end of May 2020.

Protocol for Public Parks

Thank you for agreeing to participate in my research. The purpose of this interview is for you to tell me about your use of headphones in public spaces. There are no right or wrong answers. This is the first phase of my research and I am keen to find out, in a very open-ended way, about people's use of headphones and their experiences of using them. I am very glad for you to volunteer anything you think I should know, even if it is not in response to a particular question I pose. I want you to know that you are under no obligation to answer every single question I ask and if you feel the need to discontinue your participation in this interview at any time, even after we have begun, you are very welcome to do so. In order to have a record of our conversation, I would like to record our discussion. Your responses will be used solely for academic purposes and your names will never be used. Confidentiality will be maintained at all times. Before we start, do you have any questions for me?
Let us now begin.

1. In what kind of urban settings do you typically wear headphones? (*probe – parks, malls, public buildings, trains etc.*)
    a. Could you tell me why you wear them in each of these kinds of places?

2. In these spaces, are you listening to something on your headphones or merely wearing them without playing any audio? (*probe for each type of space*)

3. Are there some urban settings where you would never consider using headphones?
    a. What are some of those places?
    b. Why would you not use headphones in these places?

My next set of questions are about using headphones in public parks.

1. What are the main reasons you go to urban parks?
    a. Do you go to parks on purpose or do you happen upon them on your way to someplace else?

2. When you go to a park, when do you put your headphones on? (*probe – do you come into the park with them on? - if so, where do you put them on? or do you put them on after coming to the park?)* Why?

3. When you are in a park with your headphones on, do you mostly listen to some kind of audio on your headphones, or do you just wear them without any audio playing, or do you do both?
    a. (**IF LISTENING**) Why do you listen to headphones when you are in a public park?
        i. What do you listen to on your headphones in parks? (*probe – don't forget about the phone calls you may make!*)
            1. How do you decide what to listen to?

ii. When you go to a park, when do you turn the audio on? Why then?
iii. Would you say you begin listening to the audio as soon as you turn it audio on? Could you tell me more about that?

b. (**IF WEARING**) Why do you wear headphones without playing anything when you are in a public park?

4. Do you ever take your headphones off when you go a park?
   a. Can you tell me why?

5. Do you sometimes:
   - Stop,
   - Pause, or
   - Reduce the volume of the audio playing while you still have your headphones on when you are in a park?

   a. **(IF YES**, for each option responded 'yes') When does this happen? Why?
   b. **(IF NO**, for each option responded 'no'), why not?

6. When you're in a park with your headphones on, what sort of activities do you do?

7. Do you think what you do in a park affects your choice of what you listen to?
   a. (**IF YES**) Can you please explain that?
   b. (**IF NO**), why not?

8. Are there certain activities that you do in parks only while listening to audio?
   a. If so, can you tell me what they are?
   b. Why do you choose to do them only while listening?

9. Are there certain activities that you do only while wearing headphones but without any audio playing on them?
   a. (**IF YES**) What are those activities?
      i. Why do you choose to do them only when you don't have any audio playing?

10. Does your use of headphones in parks differ according to the following conditions? Can you tell me why?:
    - the time of day (*probe – morning, afternoon, evening, and night*)
    - day of week (*probe – weekdays and weekends*)
    - time of year (*probe – spring, summer, fall, and winter*)

    a. Are you listening to audio or just wearing headphones at each of these times?

11. Do you listen to audio more often when you are stationary in a park or when you are on the move?
    a. Why is that?

12. Do you think whether you are moving in the park or not affects what audio you choose to listen to?
    a. Can you explain why?

13. Do you wear headphones without audio playing more often when you are stationary or more often when you are on the move?
    a. Why is that?

14. How do you feel when you have your headphones on in a park:
    a. With audio playing?
    b. Without any audio playing?

15. How do you experience a park when you are listening to audio on headphones?
    a. Do you think this experience is different from when you're wearing headphones without having any audio playing? Why do you think so?
    b. Do you think this experience is different from when you don't have your headphones on? Why do you think so?

That is all questions I have for you about parks. Is there anything else you can tell me about your use of headphones in parks?

The next set of questions are about using headphones on public transit.

Protocol for Public Transit

1. In what kind of urban settings do you typically wear headphones? (*probe – parks, malls, public buildings, trains etc*.)
    a. Could you tell me why you wear them in each of these places?

2. In these spaces, are you listening to something on your headphones or merely wearing them without playing any audio?

3. Are there some urban settings where you would never consider using headphones?
    a. What are some of those places?
    b. Why would not use headphones in these places?

Now I would like to talk about using headphones on public transit. When I say public transit, that includes trains, subways, busses, and light rails.

1. When you ride public transit, when do you put your headphones on? (*probe – do you come into public transit with them on? - if so, where do you put them on? or do you put them on after coming to public transit?)* Why?

2. When you are on public transit with your headphones on, do you listen to audio on headphones, or do you just wear them without any audio playing, or do you do both?
    a. (**IF LISTENING**) Why do you listen to headphones when you are in public transit?
        i. What do you listen to on your headphones on public transit? (*probe – don't forget about the phone calls you may make!*)
            1. How do you decide what to listen to?
        ii. When you ride public transit, when do you turn the audio on? Why then?
        iii. Would you say you begin listening to the audio as soon as you turn the audio on? Could you tell me more about that?
    b. (**IF WEARING**) Why do you wear headphones without playing anything when you are on public transit?

3. Do you ever take your headphones off when you ride public transit? Can you tell me why?
4. Do you sometimes:
    - Stop,
    - Pause, or
    - Reduce the volume of the audio playing while you still have your headphones on when you are on public transit?

    b. **(IF YES**, for each option responded 'yes') When does this happen? Why then?
    c. **(IF NO**, for each option responded 'no'), why not?

5. When you're on public transit with your headphones on, what sort of activities do you do?

6. Do you think what you do on public transit affects your choice of what you listen to?
    a. (**IF YES**) What effect does it have?
    b. (**IF NO**), why not?

7. Are there certain activities that you do only while listening to audio?
    a. (**IF YES**) What are those activities?
        i. Why do you choose to do them only while listening?

8. Are there certain activities that you do only while wearing headphones without any audio playing on them?
    a. (**IF YES**) Can you tell me what they are?
        i. Why do you choose to do them only when you don't have any audio playing?

9. Does your use of headphones on public transit differ based on the following conditions? Can you please explain why?:

- the time of day (*probe – morning, afternoon, evening, and night*)
- day of week (*probe – weekdays and weekends*)
- time of year (*probe – spring, summer, fall, and winter*)

a. Are you listening to audio or merely wearing headphones during each of these times?

10. Does your use of headphones on public transit differ according to the following conditions? Can you please explain why?:
    - What direction you are travelling in
    - How far you are travelling (*probe – distance*)
    - How long the trip will take (*probe – time*)

    a. Are you listening to audio or merely wearing headphones without any audio under each of these conditions?

11. Do you listen to audio more often when you are sitting down or standing up on public transit? Why is that?
    a. Do you think whether you are sitting down or standing up on public transit affects what audio you choose to listen to? Why is that?
    b. Do you just wear headphones more often without listening to anything when you are sitting down or when you are standing up? Why do you think that is?

12. How do you feel when you have your headphones on public transit:
    a. With audio playing?
    b. Without any audio playing?

13. How would you describe your experience of public transit when you are listening to audio on headphones?
    a. Do you think this experience is different from when you're wearing headphones without having any audio playing? Why do you think that?
    b. Is this experience different from when you don't have your headphones on at all? Why is that?

14. What steps do you take to make sure you're paying attention to your stop?

That is all questions I have for you. Is there anything else you can tell me about your use of headphones in public transit?
Thank you very much for participating in this research project.

APPENDIX E

PROTOCOL FOR ONLINE SURVEY

Appendix E contains the questionnaire used for the online surveys. The survey was administered via Google Forms. Each survey took about 8 minutes to complete. A total of 134 people responded to the survey. They were conducted over the course of two months, from mid-July 2020 to mid-September 2020.

URL to this survey:
https://docs.google.com/forms/d/e/1FAIpQLSfqKG601VtnwCsJxIPgjASRZNxav9O5p_6sq4-HdkxlFRRnpg/viewform?usp=sf_link

Thank you for your interest in taking this survey!

The purpose of this survey is to find out about people's use of headphones (or any of its variants including earphones, earbuds, AirPods or anything similar) in public spaces, particularly in public parks and public transit in North America.

Almost all questions ask you to choose an answer or multiple answers from a list of possible answers. For a few, you need to write you own short answer/s.
You are under no obligation to answer every question. If you feel the need to discontinue your participation in this survey at any time, you are welcome to do so.

Your responses will be used solely for academic purposes. Your name will never be used and confidentiality will be maintained at all times.
The survey will not pose any known risks or discomforts in either physical or emotional terms. In the unlikely event that a risk/discomfort arises, you could choose not to answer those questions or even discontinue your participation from the survey.
There may be risks that are not yet known, for instance, the risk of intrusion by third parties (such as data hacking). However, no personal identifiers will be collected, therefore, your identity will remain anonymous in that unlikely event.
Data will be stored on the researcher's secure private cloud.

To qualify you should: have used headphones in parks or on trains; have visited these spaces by yourselves, without being accompanied by friends or family; and be 18 years or older.

Please click "next" below if you fulfill all three of these requirements and consent to participating in the survey.

If you have any questions prior to taking part in the survey, please email them to csd24@njit.edu

1. What is your gender?
2. What is your age?
3. What is your current location? (please state the city and state)
4. How many types of headphones do you own? (The five types of headphones are: on ear headphones, over-ear headphones, earbuds, earphones, and bone conduction headphones. Please state how many *types* of headphones you own, NOT the number of *pairs* you own)
5. Do you use the same type of headphones in public parks and on public transit?
    a. No, I use different types of headphones in parks and public transit
    b. Yes, I use the same types even though I own multiple types of headphones
    c. Yes, I use the same types because I only own one type of headphones

The next set of questions are about using headphones in public parks.

1. Sometimes people wear headphones with or without any audio playing. Regardless of whether or not you have audio playing, how often do you wear headphones in a park?
    a. Every time I'm in a park
    b. Most of the time I'm in a park
    c. Sometimes when I'm in a park
    d. Never when I'm in a park
2. When you wear headphones in a public park, do you:
    a. Always play some kind of audio
    b. Just wear the headphones without playing any audio
    c. Do a mix of both, with audio playing sometimes and no audio playing other times
3. When you are in a public park and you have audio playing on your headphones, do you:
    a. Always pay attention to the audio that is playing
    b. Sometimes pay attention to the audio and occasionally zone out
    c. Almost never pay attention to the audio
    d. I don't play any audio
4. When you are in a public park, why do you wear headphones regardless of whether or not you are playing any audio? (select all that apply)
    a. To be socially unavailable from other people
    b. To make time go by faster
    c. To concentrate on something, such as a task at hand
    d. To be less disturbed by the surroundings
    e. To reduce or cancel outside ambient sounds that I do not wish to hear
    f. To avoid causing nuisance to others with my audio
    g. To listen to something particular
    h. To have a more intimate listening experience
    i. To relieve any disorders I sometimes experience, such as tinnitus, PTSD, and ADHD
    j. To relax
    k. For convenience, including to make or receive phone calls hands free
    l. To relive particular past experiences tied to certain audio
    m. To keep busy or entertained
    n. Out of habit
    o. If you have a different reason/s that is not mentioned above, briefly state them here:
5. How would you rate your experience of being in a park in terms of the following parameters when you have audio playing on your headphones? (mark only those parameters that apply)

	1	2	3	4	5
How good was your **mood**					

(1 = not good at all, 5 = very good)					
How **safe** did you feel (1 = not safe at all, 5 = very safe)					
How much did you **enjoy** your time (1 = not at all, 5 = very much)					
How **relaxed** did you feel (1 = not relaxed at all, 5 = very relaxed)					
How close you felt to **nature** (1 = not close at all, 5 = very close)					

6. How would you rate your experience of being in a park if you were actually paying attention to the audio that is playing? (mark only those parameters that apply)

	1	2	3	4	5
How good was your **mood** (1 = not good at all, 5 = very good)					
How **safe** did you feel (1 = not safe at all, 5 = very safe)					
How much did you **enjoy** your time (1 = not at all, 5 = very much)					
How **relaxed** did you feel (1 = not relaxed at all, 5 = very relaxed)					
How close you felt to **nature** (1 = not close at all, 5 = very close)					

7. How would you rate your experience of being in a park if you didn't have headphones on in a park? (mark only those parameters that apply)

	1	2	3	4	5
How good was your **mood** (1 = not good at all, 5 = very good)					
How **safe** did you feel (1 = not safe at all, 5 = very safe)					
How much did you **enjoy** your time (1 = not at all, 5 = very much)					
How **relaxed** did you feel (1 = not relaxed at all, 5 = very relaxed)					
How close you felt to **nature** (1 = not close at all, 5 = very close)					

8. The use of headphones in parks in increasing. Do you think, as a result, this will change how people use parks?
    a. Yes
    b. No
    c. I don't know
9. What do you think these changes will be? (please explain briefly)

10. Do you think your current use of headphones in parks has changed during the COVID-19 pandemic?
    d. Yes
    e. No
    f. I'm not sure
11. How has your use of headphones in public parks changed? (for instance, how long you have your headphones on for, what you listen to on them, the type of headphones you use etc. Please explain briefly)

The next set of questions are about using headphones on public transit.

1. Sometimes people use headphones with or without any audio playing. Regardless of whether or not you have audio playing, how often do you have headphones on public transit?
    a. Every time when I'm on public transit
    b. Most of the time when I'm on public transit
    c. Sometimes when I'm on public transit
    d. Never when I'm on public transit
2. When you have your headphones on in a public park, do you,
    a. Always play some kind of audio on them
    b. Just wear headphones without playing any audio
    c. Do a mix of both, with audio playing sometimes and no audio playing during others
3. Whenever you have audio playing on your headphones when you are on public transit, do you,
    a. Always listen (pay attention) to the audio that is playing
    b. Listen (pay attention) to the audio only sometimes and occasionally zone out
    c. Almost never listen (pay attention) to the audio
4. When you are on public transit, why do you use headphones (irrespective of whether you play audio or not)? (select all that apply)
    a. To be socially unavailable from other people
    b. To make time go by faster
    c. To concentrate on something, such as a task at hand
    d. To be less disturbed by the surrounding
    e. To reduce or cancel outside ambient sounds that I do not wish to hear
    f. To avoid causing nuisance to others with my audio
    g. To listen to something particular
    h. To have a more intimate listening experience
    i. To relieve any disorders I sometimes experience, such as tinnitus, PTSD, and ADHD
    j. To relax
    k. For convenience, including to make or receive phone calls hands free
    l. To relive particular past experiences tied to certain audio
    m. It keeps me busy or entertained
    n. Out of habit

o. If you have a different reason/s that is not mentioned above, briefly state them here:

5. How would you rate your experience of public transit when you have audio playing on your headphones based on the following parameters? (tick the box pertaining to the rating)

	1	2	3	4	5
How good was your **mood** (1 = not good at all, 5 = very good)					
How much did you **enjoy** your time (1 = not at all, 5 = very much)					
How **distracted** were you (1=very distracted, 5=not distracted at all)					
How **tolerable** was your journey (1 = not at all, 5 = very tolerable)					
How fast did the **time** go by (1=not very fast, 5=very fast					

6. How would you rate your experience of a park if you were actually paying attention to the audio that is playing? (tick the box pertaining to the rating)

	1	2	3	4	5
How good was your **mood** (1 = not good at all, 5 = very good)					
How much did you **enjoy** your time (1 = not at all, 5 = very much)					
How **distracted** were you (1=very distracted, 5=not distracted at all)					
How **tolerable** was your journey (1 = not at all, 5 = very tolerable)					
How fast did the **time** go by (1=not very fast, 5=very fast					

7. How would you rate your experience of a park if you didn't have headphones on in a park? (tick the box pertaining to the rating)

	1	2	3	4	5
How good was your **mood** (1 = not good at all, 5 = very good)					
How much did you **enjoy** your time (1 = not at all, 5 = very much)					
How **distracted** were you (1=very distracted, 5=not distracted at all)					
How **tolerable** was your journey (1 = not at all, 5 = very tolerable)					
How fast did the **time** go by (1=not very fast, 5=very fast					

8. Do you think your current use of headphones on transit has changed during the COVID-19 pandemic?
    a. Yes
    b. No
    c. I'm not sure

How has you use of headphones on public transit changed? (for instance, how long you have your headphones on for, what you listen to on them, the type of headphones you use etc. Please explain briefly.)

APPENDIX F

PROTOCOL FOR ON-SITE SURVEYS IN PARKS

Appendix F contains the questionnaire used for the on-site surveys in parks. Each survey took around 3 minutes to complete and were administered both on paper and online, depending on the respondents' preferences. A total of 68 people responded to the survey across the three selected parks: Washington Square Park, Tompkins Square Park, and Madison Square Park.

URL to the survey (for those who do not wish to fill the paper copy):
https://docs.google.com/forms/d/e/1FAIpQLScxgaoTHGaISC25vUYqviaMq7EVD9vyBLAR_18dTqOaRtEWzg/viewform?usp=sf_link

Thank you agreeing to take part in this survey!
This should take not take more than 6 minutes.
The purpose of this survey is to find out about people's use of headphones in this public park. There are no right or wrong answers and I am keen to find out about your use of headphones and you experiences of using them in this particular park.
You to know that you are under no obligation to answer every single question I ask and if you feel the need to discontinue your participation in this survey at any time, you are very welcome to do so. Your responses will be used solely for academic purposes. No personal identifies will be collected and confidentiality will be maintained at all times.

What is your gender? - _____
What is your age? - _____

1. When you decided to come here, at what point did you put your headphones on?
    a. When I left my house/apartment
    b. If drove, after getting out of my vehicle
    c. If took public transit, as I got to the train/subway station
    d. Right before I entered the park or while I entered
    e. Other: _____
2. When you decided to come here, when did you first turn the audio on?
    a. Almost immediately after putting my headphones on
    b. Shortly after putting headphones on but before entering the park
    c. Shortly after entering the park
    d. Right before engaging in activities that I came to the park for
    e. I didn't turn the audio on at all
    f. Other (please state): _____
3. When you decided to come here and began playing audio on your headphones, when would you say you began paying attention to the audio that is playing?
    a. Immediately after I turned on the audio
    b. Shortly after turning the audio on
    c. Only when engaging in activities that I came to the park for
    d. I never pay attention to the audio
    e. Other (state briefly): _____
4. What kind of audio do you play on your headphones when you are here? (select all that apply)
    a. Music/audio with lyrics
    b. Instrumental music/audio
    c. Soundtracks with natural sounds (like sound of water flowing, birds chirping)
    d. Podcasts
    e. Audiobooks
    f. Videos (includes movies, TV shows, and other video-enabled content)

g. I don't play any audio
h. Other: _____

5. When you are in a public park, why do you use headphones (irrespective of whether you play audio or not)? (select all that apply)
    a. To be socially unavailable from other people
    b. To make time go by faster
    c. To concentrate on something, such as a task at hand
    d. To be less disturbed by the surrounding
    e. To reduce or cancel outside ambient sounds that I do not wish to hear
    f. To avoid causing nuisance to others with my audio
    g. To listen to something particular
    h. To have a more intimate listening experience
    i. To relieve any disorders I sometimes experience such as tinnitus, PTSD, and ADHD
    j. To relax
    k. For convenience, including to make or receive phone calls hands free
    l. To relive particular past experiences tied to certain audio
    m. It keeps me busy or entertained
    n. Out of habit
    o. If you can't decide under which of the above your response belongs, or if you have a different reason/s that is not mentioned above, state them here, briefly:

        _____

        _____

6. What activities do you pursue in this park while you have your headphones on? Are you playing audio or merely wearing headphones while doing them?

Activity	**Playing Audio (P) / Not Playing Audio (NP)**	**If playing audio, are you paying attention to it? (Y / N)**

7. When you decide that you want to leave this park, when do you turn the audio off?

    _____

8. When you decide that you want to leave this park, when do you take your headphones off?

    _____

9. How would you rate your experience of this park when you have audio playing on your headphones based on the following parameters? (tick the box pertaining to the rating)

	1	2	3	4	5
How good was your **mood** (1 = not good at all, 5 = very good)					
How **safe** did you feel (1 = not safe at all, 5 = very safe)					
How much did you **enjoy** your time (1 = not at all, 5 = very much)					
How **relaxed** did you feel (1 = not relaxed at all, 5 = very relaxed)					
How close you felt to **nature** (1 = not close at all, 5 = very close)					

10. How different would this rating (of your experience of this park) be if you were actually paying attention to the audio that is playing?

	1	2	3	4	5
How good was your **mood** (1 = not good at all, 5 = very good)					
How **safe** did you feel (1 = not safe at all, 5 = very safe)					
How much did you **enjoy** your time (1 = not at all, 5 = very much)					
How **relaxed** did you feel (1 = not relaxed at all, 5 = very relaxed)					
How close you felt to **nature** (1 = not close at all, 5 = very close)					

11. How different would this rating (of your experience of this park) be if you didn't have headphones on in a park?

	1	2	3	4	5
How good was your **mood** (1 = not good at all, 5 = very good)					
How **safe** did you feel (1 = not safe at all, 5 = very safe)					
How much did you **enjoy** your time (1 = not at all, 5 = very much)					
How **relaxed** did you feel (1 = not relaxed at all, 5 = very relaxed)					
How close you felt to **nature** (1 = not close at all, 5 = very close)					

12. What are your acoustic expectations for this park? (for instance, do you wish there was less chatter, could hear certain sounds more frequently and others less etc.) Please state briefly.

_____

_____

13. Do you think your current use of headphones in parks has somehow changed during the COVID-19 pandemic?
    g. Yes, it has changed
    h. No, it has not changed
    i. I'm not sure
14. (If a) How has you use of headphones in public parks changed? (for instance, how long you have your headphones on for, what you listen to on them, the type of headphones you use etc.)

_____

_____

APPENDIX G

PROTOCOL FOR ON-SITE SURVEYS ON PUBLIC TRANSIT

Appendix G contains the questionnaire used for the on-site surveys on the PATH train. Each survey took around 3 minutes to complete and were administered both on paper and online, depending on the respondents' preferences. A total of 49 people responded to the survey on the PATH train.

URL to the survey (for those who do not wish to fill the paper copy):
https://docs.google.com/forms/d/e/1FAIpQLSf3BURwMlqq1nLG2DnUeolxyLfwW3hlydrppJyKg6fJiQjV5g/viewform?usp=sf_link

Thank you agreeing to take part in this survey!
This should take not take more than 6 minutes.
The purpose of this survey is to find out about people's use of headphones on the PATH train. There are no right or wrong answers and I am keen to find out about your use of headphones and you experiences of using them on this train.
You to know that you are under no obligation to answer every single question I ask and if you feel the need to discontinue your participation in this survey at any time, you are very welcome to do so. Your responses will be used solely for academic purposes. No personal identifies will be collected and confidentiality will be maintained at all times.

What is your gender? - _____
What is your age? - _____

1. When you decided to take the PATH, at what point did you put your headphones on?
    a. When I left my house/apartment
    b. As I got to the train station
    c. Right before or as I boarded the train
    d. After settling down on the train – either after sitting or finding a place to stand
    e. Other: _____
2. When did you first turn the audio on when you decided to take the PATH?
    a. Almost immediately after putting my headphones on
    b. Shortly after putting headphones on but before boarding the train
    c. Shortly after boarding the train
    d. I didn't turn the audio on at all
    e. Other (please state): _____
3. When you decided to take the PATH and began playing audio on your headphones, when would you say you began paying attention to the audio that is playing?
    a. Immediately after I turned on the audio
    b. Shortly after turning the audio on
    c. I never pay attention to the audio
    d. Other (state briefly): _____
4. What kind of audio do you play on your headphones when you are here?
    a. Music/audio with lyrics
    b. Instrumental music/audio
    c. Podcasts
    d. Audiobooks
    e. Videos (includes movies, TV shows, and other video-enabled content)
    f. I don't play any audio
    g. Other: _____

5. Why do you use headphones in on the PATH? (*mark all that apply)*
    a. To be socially unavailable from other people
    b. To make time go by faster
    c. To concentrate on something, such as a task at hand
    d. To be less disturbed by the surrounding
    e. To reduce or cancel outside ambient sounds that I do not wish to hear
    f. To avoid causing nuisance to others with my audio
    g. To listen to something particular
    h. To have a more intimate listening experience
    i. To relieve any disorders I sometimes experience, such as tinnitus, PTSD, and ADHD
    j. To relax
    k. For convenience, including to make or receive phone calls hands free
    l. To relive particular past experiences tied to certain audio
    m. It keeps me busy or entertained
    n. Out of habit
    o. If you can't decide under which of the above your response belongs, or if you have a different reason/s that is not mentioned above, state them here, briefly:

        _____

        _____

6. What activities do you do here while you have your headphones on the train? Are you playing audio or merely wearing headphones while doing them?

Activity	**Playing Audio (P) / Not Playing Audio (NP)**	**If playing audio, are you paying attention to it? (Y / N)**

7. When you alight from the PATH, when do you turn the audio off?

    _____

8. When you alight from the PATH, when do you take your headphones off?

    _____

9. How would you rate your experience of being on this train when you have audio playing on your headphones based on the following parameters? (tick the box pertaining to the rating)

	1	2	3	4	5
How good was your **mood** (1 = not good at all, 5 = very good)					
How much did you **enjoy** your time					

(1 = not at all, 5 = very much)					
How **distracted** were you (1=very distracted, 5=not distracted at all)					
How **tolerable** was your journey (1 = not tolerable at all, 5 = very tolerable)					
How fast did the **time** go by (1=not very fast, 5=very fast					

10. How different would this rating (of your experience of this train) be if you were actually paying attention to the audio that is playing?

	1	2	3	4	5
How good was your **mood** (1 = not good at all, 5 = very good)					
How much did you **enjoy** your time (1 = not at all, 5 = very much)					
How **distracted** were you (1=very distracted, 5=not distracted at all)					
How **tolerable** was your journey (1 = not tolerable at all, 5 = very tolerable)					
How fast did the **time** go by (1=not very fast, 5=very fast					

11. How different would this rating (of your experience of this train) be if you didn't have headphones on in a train?

	1	2	3	4	5
How good was your **mood** (1 = not good at all, 5 = very good)					
How much did you **enjoy** your time (1 = not at all, 5 = very much)					
How **distracted** were you (1=very distracted, 5=not distracted at all)					
How **tolerable** was your journey (1 = not tolerable at all, 5 = very tolerable)					
How fast did the **time** go by (1=not very fast, 5=very fast					

12. What are your acoustic expectations for the PATH train? (for instance, do you wish there was less noise, could hear certain sounds more frequently and others less etc.) Please state briefly.

    _____

    _____

13. Do you think your current use of headphones on the PATH has somehow changed during the COVID-19 pandemic?
    j. Yes, it has changed
    k. No, it has not changed
    l. I'm not sure

14. (If a) How has you use of headphones in public parks changed? (for instance, how long you have your headphones on for, what you listen to on them, the type of headphones you use etc.)

_____

_____

REFERENCES

Adorno, T. (1976). *Introduction to the Sociology of Music*. New York: Seabury Press.

Adorno, T. (1991). *The Culture Industry. Selected Essays on Mass Culture*. London: Routledge.

Aletta, F., Kang, J., Astolfi, A., & Fuda, S. (2016). Differences in Soundscape Appreciation of Walking Sounds from Different Footpath Materials in Urban Parks. *Sustainable Cities and Society*, *27*, 367-376. https://doi.org/https://doi.org/10.1016/j.scs.2016.03.002

Aletta, F., Lepore, F., Kostara-Konstantinou, E., Kang, J., & Astolfi, A. (2016). An Experimental Study on the Influence of Soundscapes on People's Behaviour in an Open Public Space. *Journal of Applied Sciences*, *6*(276).

Allen, H. (1982). Battle of the Ban. *The Washington Post*. Retrieved 17 January 2020 from https://www.washingtonpost.com/archive/lifestyle/1982/07/14/battle-of-the-ban/df8182ef-10db-435a-8529-a980632ef05f/.

Appadurai, A. (1986). *The Social Life of Things: Commodities in Cultural Perspective*. Cambridge [England]: Cambridge University Press.

Atkinson, R. (2011). Ears Have Walls: Thought on the Listening Body in Urban Space. *Journal of Media Geography* (Winter), 12-26.

Augé, M. (1995). *Non-Places: Introduction to an Anthropology of Supermodernity*. London: Verso.

Bachelard, G. (2000). *The Dialectic of Duration*. Manchester: Clinamen.

Barthes, R. (2002). The New Citroën. In P. Wollen & J. Kerr (Eds.), *Autopia: Cars and Culture*. London: Reaktion Books.

Bauman, Z. (2003). *Liquid Love: On the Frality of Human Bonds*. Cambridge, UK: Polity Press.

Benjamin, W. (1969). The Work of Art in the Age of Mechanical Reproduction. In H. Arendt (Ed.), *Illuminations* (pp. 217-251). New York: Schocken.

Benjamin, W. (1973). *Illuminations*. London: Fontana/Collins.

Benjamin, W. (1999). *The Arcades Project*. Cambridge, Massachusetts: Belknap Press.

Berkman, F. (2012). *Listen Up: Here's a Brief History of Headphones*. Retrieved 10 August from https://mashable.com/2012/09/26/headphones/

Bickford, T., Stanyek, J., & Gopinath, S. (2014). *Earbuds Are Good for Sharing: Children's Headphones as Social Media at a Vermont School* (Vol. 1). New York: Oxford University Press.

Bloch, E. (1986). *The Principle of Hope*. Cambrdge: MIT Press.

Bose Corporation. (2019a). *Bose Frames*. Retrieved 3rd January from https://www.bose.com/en_us/products/frames.html

Botteldooren, D., & Coensel, B. D. (2006). Quality assessment of quiet areas: A multicriteria approach. *6th European Conference on Noise Control,* Tampere, Finland.

Boyd, D. (2007). Why Youth (Heart) Social Network Sites: The Role of Networked Publics in Teenage Social Life. In D. Buckingham (Ed.), *Youth, Identity, and Digital Media* (pp. 1-26). Cambridge, MA: MIT Press.

Brambilla, G., & Maffei, L. (2006). Responses to noise in urban parks and in rural quiet areas. *Acta Acustica United with Acustica*, *92*, 881-886.

Brooks, B., & Schulte-Fortkamp, B. (2016). The Soundscape Standard. *Inter-Noise*, Hamburg.

Brown, A. L. M., A. (2004). An Approach to the Acoustic Design of Outdoor Space *Journal of Environmental Planning and Management*, *47*(6), 827-842.

Bruce, N., Condie, J., Henshaw, V., & Payne, S. R. (2015). Analysing Olfactory and Auditory Sensescapes in English Cities: Sensory Expectation and Urban Environmental Perception. *Ambiances*. https://doi.org/10.4000/ambiances.560

Bull, M. (2000). *Sounding Out the City: Personal Stereos and the Management of Everyday Life*. Oxford: Berg.

Bull, M. (2005). No Dead Air! The iPod and the Culture of Mobile Listening. *Leisure Studies*, *24*(4), 343-355. https://doi.org/10.1080/0261436052000330447

Bull, M. (2009). *Sound Moves: iPod Culture and Urban Experience*. Hoboken: Taylor and Francis.

Burdick, A. (2001). Now Hear This: Listening Back on a Century of Sound. *Harper's Magazine*, *303*, 70.

Carles, J. L., Bernaldez, F. G., & De Lucio, J. V. (1992). Audiovisual Interactions and Soundscape Preferences. *Landscape Research*, *17*, 52-56.

Castells, M. (2006). *The Network Society: From Knowledge to Policy*. Center for Transatlantic Relations, Paul H. Nitze School of Advanced International Studies, Johns Hopkins University.

De Silva, C. S., Warusavitharana, E. J., & Ratnayake, R. (2017). An examination of the temporal effects of environmental cues on pedestrians' feelings of safety. *Computers, Environment and Urban Systems*, *64*, 266-274. https://doi.org/https://doi.org/10.1016/j.compenvurbsys.2017.03.006

de Souza e Silva, A., & Firth, J. (2012). *Mobile Interfaces in Public Spaces: Locational Privacy, Control, and Urban Sociability*. New York: Routledge.

Dubois, D. G., C.; Raimbault, M. (2006). A Cognitive Approach to Urban Soundscape: Using Verbal Data to Access Everyday Life Auditory Categories. *Acta Acustica United with Acustica*, *92*, 945-951.

D'Alessandro, F., Evangelisti, L., Guattari, C., Grazieschi, G., & Orsini, F. (2018). Influence of Visual Aspects and Other Features on the Soundscape Assessment of a University External Area. *Building Acoustics*, *25*(3), 199-217. https://doi.org/10.1177/1351010X18778759

Echevarria, S., Gemma, M., Van Renterghem, T., Sun, K., De Coensel, B., & Botteldooren, D. (2017). Using Virtual Reality for Assessing the role of Noise in the Audio-Visual Design of an Urban Public Space. *Landscape and Urban Planning*, *167*, 98-107. https://doi.org/https://doi.org/10.1016/j.landurbplan.2017.05.018

Egan, M. D. (1988). *Architectural acoustics*. New York: McGraw-Hill Inc.

Elliot, A., & Urry, J. (2010). *Mobile Lives*. London: Routledge.

Foucault, M. (1986). Heterotopias. *Diacritics* (1), 22-27.

Fowler, M. (2017). *Architectures of Sound, Acoustic Concepts and Parameters for Architectural Design*. Berlin: Birkhauser.

Franklin, U. (2000). Silence and the Notion of the Commons. *Journal of Acoustic Ecology*, *1*, 14-17.

Friedberg, A. (1993). Window Shopping: Cinema and the Postmodern. Berkeley: University of California Press

Fuda, S., Aletta, F., Kang, J., & Astolfi, A. (2015). Sound Perception of Different Materials for the Footpaths of Urban Parks. *Energy Procedia*, *78*, 13-18. https://doi.org/https://doi.org/10.1016/j.egypro.2015.11.101

Goffman, E. (1959). *The Presentation of Self in Everyday Life*. New York: Anchor Books.

Goffman, E. (1963). *Behavior in Public Spaces*. New York: The Free Press.

Goffman, E. (1971). *Relations in Public: Microstudies of Public Order*. London: Penguin.

Haas, G., Stemasov, E., & Rukzio, E. (2018). Can't You Hear Me?: Investigating Personal Soundscape Curation. *International Conference on Mobile and Ubiquitous Multimedia,*

Hagood, M. (2011). Quiet Comfort: Noise, Otherness, and the Mobile Production of Personal Space. *American Quarterly*, *63*(3), 573-589.

Hagood, M. (2019). *Hush: Media and Sonic Self-Control*. Durham, NC: Duke University Press.

Hatuka, T., & Toch, E. (2016). The Emergence of Portable Private-Personal Territory: Smartphones, Social Conduct and Public Spaces. *Urban Studies, 53*(10), 2192-2208. https://doi.org/10.1177/0042098014524608

Hatuka, T., & Toch, E. (2017). Being visible in public space: The normalisation of asymmetrical visibility *Urban Studies*, *54*(4), 984-998.

Hedfors, P. (2003). Sonic Tools for Landscape Architecture. *Australian Forum for Acoustic Ecology/World Forum for Acoustic Ecology*, Melbourne, Australia.

Hellström, B., Nilsson, M. E., Axelsson, Ö., & Lundén, P. (2014). Acoustic Design Artifacts and Methods for Urban Soundscapes: A Case Study on the Qualitative Dimensions of Sounds. *Journal of Architectural and Planning Research*, *31*(1), 57-71.

Hosokawa, S. (1984). The Walkman Effect. *Popular Music*, *4*, 165-180.

International Organization for Standardization. (2014). Acoustics - Soundscape - Part 1: Definition and Conceptual Framework. In (Vol. ISO 12913-1:2014). Geneva, Switzerland: ISO.

Ismail, M. R. (2014). Sound Preferences of the Dense Urban Environment: Soundscape of Cairo. *Frontiers of Architectural Research*, *3*(1), 55-68. https://doi.org/https://doi.org/10.1016/j.foar.2013.10.002

Iveson, K. (1998). Putting the Public Back into Public Space. *Urban Policy and Research*, *16*(1), 21-33. https://doi.org/10.1080/08111149808727745

Jay, M. (1993). *Downcast Eyes: The Denigration of Vision in Twentieth-Century French Thought*. Berkeley: University of California Press.

Kang, J. (2011). Noise Management: Soundscape Approach. In J. O. Nriagu (Ed.), *Encyclopedia of Environmental Health* (pp. 174-184). Elsevier. https://doi.org/https://doi.org/10.1016/B978-0-444-52272-6.00260-9

Kang, J., & Zhang, M. (2002). Semantic Differential Analysis on the Soundscape of Urban Open Public Spaces. *Journal of Acoustical Society of America*, *112*(5), 24-35.

Kelman, A. Y. (2010). Rethinking the Soundscape. *The Senses and Society*, *5*(2), 212-234. https://doi.org/10.2752/174589210X12668381452845

Kunst, A. (2019). *How Often Do You Use Headphones?* Statista. Retrieved 16th November from https://www.statista.com/statistics/283620/us-consumer-purchase-plans-smartphone-accessories-2010/

Lee, F. L. F., Leung, L., Qiu, J. L., & Chu, D. S. C. (2012). *Frontiers in New Media Research*. New York: Routledge.

Lefebvre, H. (1991). *The Production of Space* (S. Nicholson, Trans.). Oxford, UK: Blackwell Publishing,

Lefebvre, H. (2004). *Rhythmanalysis: Space, Time, and Everyday Life* (S. Elden & G. Moore, Trans.). London: Bloomsbury.

LeMahieu, D. L. (1988). *A Culture for Democracy: Mass Communication and the Cultivated Mind in Britain Between the Wars*. New York: Clarendon.

Leung, T. M., Chau, C. K., Tang, S. K., & Xu, J. M. (2017). Developing a mMultivariate Model for Predicting the Noise Annoyance Responses Due to Combined Water Sound and Road Traffic Noise Exposure. *Applied Acoustics*, *127*, 284-291. https://doi.org/https://doi.org/10.1016/j.apacoust.2017.06.020

Liu, S. (2019a). *Smart Headphone Market Size by Product in the U.S. 2014-2022*. Retrieved 17th November from https://www.statista.com/statistics/694067/smart-headphone-market-size-by-product-in-the-us/

Liu, S. (2019b). *Worldwide Shipments of Headphones 2013-2019*. Retrieved 17th November from https://www.statista.com/statistics/236075/revenue-of-headphone-shipments-in-the-united-states/

Loeffler, J. (2019). *Headphones: A History of the Original Wearable Tech*. Retrieved 10 August from https://interestingengineering.com/headphones-a-history-of-the-original-wearable-tech

Maculewicz, J., Erkut, C., & Serafin, S. (2016). How Can Soundscapes Affect the Preferred Walking Pace? *Applied Acoustics*, *114*, 230-239. https://doi.org/https://doi.org/10.1016/j.apacoust.2016.07.031

Madanipour, A. (2003). Public and Private Spaces of the City. London: Routledge.

Madanipour, A. (2010). *Whose Public Space? International Case Studies in Urban Design and Development*. London: Routledge.

May, K. R., & Walker, B. N. (2017). The Effects of Distractor Sounds Presented Through Bone Conduction Headphones on the Localization of Critical Environmental Sounds. *Applied Ergonomics*, *61*, 144-158. https://doi.org/https://doi.org/10.1016/j.apergo.2017.01.009

McLuhan, M. (1964). *Understanding Media: The Extensions of Man*. New York: McGraw-Hill.

Milgram, S. (1970). The Experience of Living in Cities. *American Association for the Advancement of Science*, *167*(3924), 1461-1468.

Müller, J. (1843). *Elements of Physiology* (W. Baly, Trans.; J. Bell, Ed.). Philadelphia: Lea and Blanchard.

O Keeffe, L., & Kerr, A. (2015). Reclaiming Public Space: Sound and Mobile Media Use by Teenagers. *International Journal of Communication*, *9*, 3562-3582.

Papacharissi, Z. (2012). A Networked Self: Identity Performance and Sociability on Social Network Sites. In F. L. F. Lee, J. Leung, J. Qiu, & D. Chu (Eds.), *Frontiers in new media research* (pp. 207-221). New York: Routledge.

Papanek, H. (1971). Purdah in Pakistan: Seclusion and Modern Occupations for Women. *Journal of Marriage and Family*, *33*(3), 517-530. https://doi.org/10.2307/349849

Porteous, J. D., & Mastin, J. F. (1985). Soundscape. *Journal of Architectural and Planning Research*, *2*, 169-186.

Pouya, S. (2017). The Role of Landscape Architecture on Sounsdcape Experience *Tukish Journal of Forest Science*, *1*(2), 183-193.

Radicchi, A. (2017). *Hush City App*. Retrieved October 5 from http://www.opensourcesoundscapes.org/hush-city/

Rehan, R. M. (2016). The Phonic Identity of the City Urban Soundscape for Sustainable Spaces. *Housing and Building National Research Center (HBRC) Journal*, *12*(3), 337-349. https://doi.org/https://doi.org/10.1016/j.hbrcj.2014.12.005

Rodrigues, R. C. (2018). Quiet Areas and Urban Sustainability. *Energy Procedia*, *153*, 334-341. https://doi.org/https://doi.org/10.1016/j.egypro.2018.10.072

Sayin, E., Krishna, A., Ardelet, C., Briand Decré, G., & Goudey, A. (2015). "Sound and Safe": The Effect of Ambient Sound on the Perceived Safety of Public Spaces. *International Journal of Research in Marketing*, *32*(4), 343-353. https://doi.org/https://doi.org/10.1016/j.ijresmar.2015.06.002

Schaeffer, P. (1966). *Traite Des Objets Musicaux: Essai Interdisciplines*. Éditions du Seuil.

Schafer, M. R. (1977). *The Tuning of the World*. Toronto: McClelland & Stewart.

Schafer, M. R. (1993). *The Soundscape: Our Sonic Environment and the Tuning of the World*. New York: Alfred Knopf Inc.

Schelemay, K. K. (2001). *Soundscape*. New York: Norton.

Schönhammer, R. (1988). The Walkman and the Primary World of the Senses. Retrieved January 17 from https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.993.3422&rep=rep1&type=pdf

Sennett, R. (1976). *The Fall of the Public Man*. Cambridge: Cambridge University Press.

Sennett, R. (1990). *The Conscience of the Eye: The Design and Social Life of Cities*. New York: Knopf.

Sherman, D. (2015). *What Long-Distance Trains Teach Us About Public Space in America*. Next City. Retrieved 7th November from https://nextcity.org/daily/entry/what-long-distance-trains-teach-us-about-public-space-in-america

Simmel, G. (1950). The Sociology of Georg Simmel. In K. H. Wolff (Ed.). New York: The Free Press.

Simmel, G. (1997a). The Metropolis and Mental Life. In D. Frisby & M. Featherstone (Eds.), *Simmel on Culture: Selected Writings*. London: London: SAGE Publications.

SOL Republic. (2014). *Sound Over Pounds: Survey Finds Two Out Of Three People Cut Their Workout Short Or Ditch It Completely Without Headphones*. CISION PR Newswire. Retrieved 1 November from https://www.prnewswire.com/news-releases/sound-over-pounds-survey-finds-two-out-of-three-people-cut-their-workout-short-or-ditch-it-completely-without-headphones-253570611.html

Southworth, M. (1969). The sonic environment of cities. *Environment and Behavior*, *1*(1), 49-70. https://doi.org/10.1177/001391656900100104

Stankievech, C. (2007). *Headphones, Epoche, and L'extimité: A Phenomenology of Interiority*. Off Screen. Retrieved 29 June from https://offscreen.com/view/stankievech_headphones

Sterne, J. (2003). *The Audible Past: Cultural Origins of Sound Reproduction*. Durham, NC: Duke University Press.

Taylor, C. (1995). *Philosophical Arguments*. Cambridge, MA: Harvard University Press.

------- *The 5 Types of Headphones (+ more) You Need to Know About*. Retrieved 10 August from https://headphonesaddict.com/types-of-headphones/

Thibaud, J.-P. (2003). The Sonic Composition of the City. In M. Bull & L. Back (Eds.), *The Auditory Culture Reader* (pp. 329-341). Oxford: Berg Publishers.

Thibaud, J.-P. (2012). Towards a praxiology of sound environment. *Sensory Studies - Sensorial Investigations,* 1-7.

Thompson, E. A. (2002). *The Soundscape of Modernity: Architectural Acoustics and the Culture of Listening in America*. Cambridge, MA: MIT Press.

Tönnies, F. (1957). *Community and Society (Gemeinschaft und Gesellschaft)* (C. P. Loomis, Trans.). East Lansing: Michigan State University Press.

Truax, B. (1978). *A Handbook for Acoustic Ecology*. Vancouver, BC: ARC Publication.

Truax, B. (1984). *Acoustic Communication*. Norwood, NJ: Ablex Pub. Corp.

Urry, J. (2000). *Sociology Beyond Societies: Mobilities for the Twenty-First Century*. London: Routledge.

Walzer, M. (1986). Pleasures and Costs of Urbanity. *Dissent*, *33*, 470-475.

Weber, H. (2010). Head Cocoons: A Sensori-Social History of Earphone Use in West Germany, 1950-2010. *Senses and Society*, *5*(3), 339-363.

Welsch, W. (1997). *Undoing Aesthetics* (Vol. 58). London: Sage Publications.

Williams, R. (1989). *Resources of Hope: Culture, Democracy, Socialism*. London: Verso.

Wirth, L. (1938). Urbanism as a Way of Life. *The American Journal of Sociology*, *44*(1), 1-24.

Yang, W. K., J. (2005a). Soundscape and Sound Preference in Urban Squares: A Case Study in Sheffield. *Urban Design*, *20*, 69-88.

Yu, L. (2009). *Soundscape Evaluation and ANN Modelling in Urban Open Spaces*. Sheffield: University of Sheffield.