

## EXPLORING THE CONCEPT OF AMBIENT SOUND FOR WELL-BEING: A SYSTEMATIC REVIEW OF THEORIES AND EVIDENCE

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### ARTICLE INFO

#### Keywords:

*Ambient sound,  
ambient noise, e  
nvironment sound,  
nature sound,  
well-being*

### ABSTRACT

*This study investigates the impact of ambient sound on well-being, focusing on its definition, theoretical foundations, and cultural interpretations. The objectives are to explore and analyse underlying theories and concepts, and to examine cultural perceptions of ambient sound's influence on human life. The researchers searched multiple databases, including JSTOR, PubMed, and Scopus, using keywords related to ambient sound and its synonyms. A total of 162 articles were examined and only 46 articles were included in the review. The results of this review proposed that definition of ambient sound highlights its role as the comprehensive auditory backdrop that shapes individuals' perceptions, understanding, and experiences of a specific location, incorporating various elements such as natural sounds, background noises, and human-generated sounds. This definition underscores the significance of ambient sound in shaping the overall sonic atmosphere and cultural interpretation of a particular space. Additionally, the perception of environmental noise varies across cultures, and cultural factors influence the use and acceptance of noise cancellation technology and the significance attributed to natural sounds. Further research is needed to explore the potential benefit of ambient sound as a background sound within a various settings such as therapeutic environment.*

## 1. INTRODUCTION

The concept of ambient sound dating back to the 1970s when Brian Eno introduced a new genre of music known as Ambient Music (Tam, 1988). Eno's music is known for its focus on creating a specific atmosphere or mood through repetitive structures and ambient sounds. Interestingly, this idea of ambient sound can be traced back to John Cage, a prominent composer and contemporary of Eno. Cage famously defined silence as 'ambient noise', which may have inspired Eno's creation of the genre of Ambient Music (Tam, 1988). This background information sets the stage for exploring the relationship between ambient sound and its impact on various aspects of life.

Scholars consistently discuss the ambiguity and confusion around interpreting the concept of ambient sound. There were few studies stated about ambient sound only which is more related to sound around us discussed in environmental noise or sound studies ranging from the effects and the strategies to overcome it (Bloemsmas et al., 2022; Michaud et al., 2022; Clark et al., 2020; Minichilli et al., 2018), noise pollution study (Thompson et al., 2021; Schubert, 2019), natural sound or sound of nature (Boersma, 1996), background music or ambient music (Tam, 1988) and ambient sound or noise (Davis & Nussbaum, 2008; LeNestour et al., 2014; Salvin et al.,

2015; Shoemark et al., 2016). Despite its importance, ambient sound has been largely overlooked by researchers, with limited studies focusing on defining, characterizing, and understanding its effects.

In the context of well-being, ambient sound has been shown to have restorative effects on psychological and physiological aspects of well-being (Largo-Wight et al., 2016). Moreover, exposure to nature sounds has improved working memory and cognitive performance in adolescents (Abbott, 2015). Van Praag et al. (2017) reported that nature sounds could induce brain connectivity changes and increase parasympathetic activity, which may relate to stress reduction. Furthermore, the effects of nature sounds have been linked to increased feelings of restoration and the recall of positive affect and memories (Ratcliffe et al., 2021). Despite the promising findings, research on the effects of ambient sound on adolescent well-being remains limited. Furthermore, there is a need for research that explores the mechanisms through which ambient sound impacts well-being and that considers the individual and contextual factors that may moderate these effects.

In this systematic literature review, we aim to identify and analyze the various definitions of ambient sound in the scientific literature. We searched multiple databases, including JSTOR, PubMed, and

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Scopus, using keywords related to ambient sound and its synonyms. A total of 162 articles were examined, and only 46 articles were included in the review, spanning from 1992 to 2023. The purpose of this review is to examine the current understanding of the concept of ambient sound and how the related field is being defined. The review aims to identify the different perspectives and approaches to defining ambient sound and its role in our environment. Additionally, the review aims to identify any gaps in the literature and areas for future research. By synthesizing the existing literature and highlighting key findings, this review seeks to provide a comprehensive and up-to-date overview of ambient sound, addressing questions such as:

1. What are the main theories and concepts underlying ambient sound?
2. How is ambient sound perceived by various cultural interpretations, and how does it shape human life?

Through this review, we aim to shed light on the diverse theories and concepts that underpin the understanding of ambient sound, drawing upon relevant scholarly literature. Additionally, we seek to explore the cultural interpretations of ambient sound and its profound impact on human life, considering how different cultures perceive and interact with soundscapes.

By examining the existing body of research, we aim to uncover the intricate relationship between ambient sound, cultural perspectives, and their influence on individual experiences and communities. This investigation will contribute to a deeper understanding of how ambient sound is defined and perceived across cultures, as well as its role in shaping various aspects of human life. Ultimately, a comprehensive examination of the theories, concepts, and cultural perspectives surrounding ambient sound will enhance our understanding of its significance and implications for human well-being, communication, and social dynamics.

## 2. METHODS

### 2.1 Specifying the research question and search strategy

This review was conducted following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Moher et al., 2009), to assess the included studies' quality and potential risk of biases.

### 2.2 Database search

The systematic literature review was initiated on 27th January 2023 to explore the concept of ambient sound and its impact on theories and evidence related to well-being. The review was performed by searching through the Scopus, PubMed, and Jstor databases using the following search query: ((noise OR "environment sound" OR "nature sound" OR "background sound" OR "ambient sound") AND (adolescen\* OR student OR child) AND (wellbeing)). The search terms were selected based on an initial assessment and were refined to ensure that only relevant papers were included in the review.

Further relevant article studies were added from Google Scholar's reference lists.

### 2.3 Selecting the evidence

The papers were reviewed in two rounds based on their title, abstract, and full text. The review was conducted in English, and only peer-reviewed articles were considered, with book chapters, thesis papers, and conference papers excluded. The first round of the review focused on assessing the title's relevance, and the paper had to mention ambient sound, theories, concepts, evidence, or products. In the second round, the relevance of the abstracts was assessed. The study had to include tests on the influence of ambient sound from a theoretical and empirical perspective, and the author had to state the dichotomy or confrontation being studied clearly. Studies that did not use ambient sound with nature or the environment were excluded.

During the third round, a full-text analysis was conducted. To be eligible for inclusion in the review, each study was required to have a control or reference group and to mention any theories or definitions related to ambient sound in the search query. The studies were also required to provide a clear description of the tests performed or to use standardized tests aligned with the review's objectives. Articles that did not mention the terms 'ambient sound', 'environment sound', 'nature sound', or 'noise' were excluded from the review. In addition, articles that were purely conceptual and lacked a solid theoretical or empirical basis were also excluded due to a lack of credible evidence.

The remaining papers were included in the review and analyzed to provide insights into the concept of ambient sound and its impact on theories and evidence related to well-being. The included articles were then analyzed in detail, with a focus on the research design, methods, results, and conclusions related to the concept of ambient sound and its impact on well-being outcomes. The articles were evaluated and categorized based on the theories and evidence they presented, as well as the type of sound exposure they focused on (e.g. nature sounds, urban sounds, etc.). The results of the systematic literature review were then synthesized and presented comprehensively, highlighting the key findings and trends in the field of ambient sound and well-being.

### 2.4 Data extraction and analysis

In the systematic review, a data-extraction table was created to gather relevant information and material related to the research questions. The table included a variety of study characteristics, including basic data, descriptive data, and outcome data. The basic data included details such as the author's name, publication year, and country. The descriptive data comprised information related to ambient sound and its effects or impacts, the aim of the study, study design, sample size, population, theories and definitions of ambient sound, the dichotomy of ambient sound, and the key findings.

3. RESULTS

3.1 Papers identified

In total, 142 papers were identified from a search of the databases, with 32 additional papers found through Google Scholar, which the total paper identified is 174. After the removal of 12 duplicates, this left 162 papers identified from the database search. Following the PRISMA guidelines process of searching for papers, duplicates were removed manually, and the titles and abstracts of the remaining 162 papers were screened; based on the inclusion and exclusion criteria there were 103 papers excluded. There were 46 included papers in the final stage based on PRISMA guidelines, as shown in Figure 1.

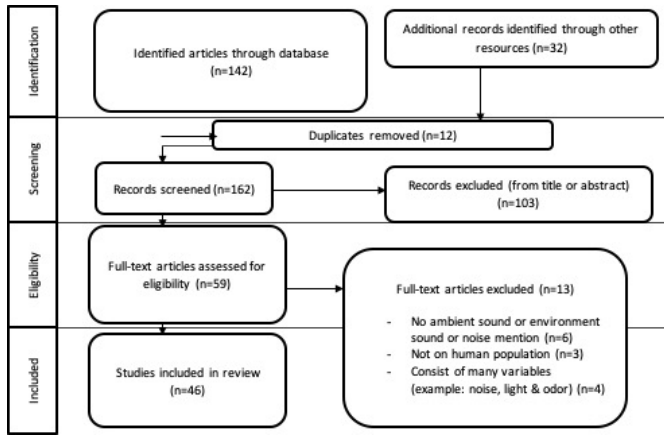


Figure 1: Flow diagram of literature search and selection

Table 1: Terms used to define the ambient sound concept

Terms used to define the ambient sound	Articles use of the term
1. Noise pollution	6
2. Natural ambient sound	1
3. Environmental noise	7
4. Noise exposure	11
5. Environment sound	3
6. Acoustic and auditory	1
7. Nature sound	5
8. Noise cancellation	1
9. Soundscape	3
10. Ambient sound	7
11. Ambient noise	1
Total = 46	

Table 2: Content Characteristics and Analysis

Authors	Sound relates	Outcomes	Research area	Context
Thompson et al., 2021	Noise from transport, industry, and community activity	Brain and cognition, sleep disturbances, stress, and learned helplessness	Public and Environmental health sciences	Noise pollution
Bloemsma et al., 2022	Road traffic noise	Stress, annoyance, and sleep disturbances	Public and Environmental health sciences	Noise pollution

Authors	Sound relates	Outcomes	Research area	Context
Boersma, 1996	The natural ambient sound is produced by natural sources, noise caused by human activities.	Unsp.	Acoustic	Natural ambient sound
Michaud et al., 2022	Unsp.	Physical health and noise annoyance	Psychology	Environmental noise
Schubert, 2019	Transportation noise	Head and stomach aches and a worse sleep quality, sleep disturbance	Environmental research and public health	Noise pollution
Clark et al., 2020	Road traffic	Mental health, well-being, and quality of life	Environmental research and public health	Environmental noise
Minicilli et al., 2018	Sound from urban areas	Children's Learning and Performance at School	Environmental research and public health	Environmental noise
Cayir et al., 2018	Transport and industrial activities	Increase in blood pressure in elevated blood pressure and hypertension	Public health	Noise exposure
Restrepo et al., 2015	Sound from the natural environment and architecture of the classroom	Wellbeing	Applied human factors and Ergonomics	Environment sound
Foulkes et al., 2019	Noise from environment	Health and well-being, sleep disturbance	Health	Noise exposure
Alheneidi & Smith, 2013	Unsp.	No significant effect of noise or information overload scale scores on academic attainment	Psychology	Noise exposure
Shepherd et al., 2013	Any noise or vibration emitted from any building, premises, or land.	Health and wellbeing	Environmental research and public health	Noise exposure
Blake & Cros, 2015	Acoustic environment sound	Sociality and survival, and the effects of the environment on socially significant human sound	anthropology	Acoustic and auditory
Zipf et al., 2020	Anthropogenic sources, road traffic, airplanes, landscaping services, and construction	Stress, cognitive impairment, and illness in humans. Insomnia, high blood pressure, and increased risk of heart	Environmental research and public health	Noise pollution
Jarosinska et al., 2018	Produce by human activities	Hearing impairment and tinnitus, poor quality of life, mental health and wellbeing	Environmental research and public health	Environmental noise
Luszczynska et al., 2014	The noise produced by wind turbine	Annoyance	Medicine and environmental health	Noise exposure

Authors	Sound relates	Outcomes	Research area	Context
Godlee, 1992	Noise in the environment produced by the industrialized world	Poor quality of sleep	Medical	Environmental noise
Dhambov & Dimitrova, 2014	Result of population growth, urbanization, and technological developments	Annoyance	Noise and health	Noise pollution
Terzakis et al., 2022	The sound produced from urban area	Short-term effects: concentration, sleep, performance, annoyance, and stress responses  Long-term effect: psycho-physiological reactions and mental	Environmental research and public health	Noise exposure
Bogdanov et al., 2022	Bird song, water lapping, wind in trees	Improve wellbeing	Applied acoustics	Nature sound
Kempen et al., 2006	Aircraft and road traffic	Children's blood pressure and heart rate	Occupational and environmental medicine	Noise exposure
Luszczynska et al., 2018	Wind turbines sound	Sleep disturbances and psychological distress	Environmental research and public health	Noise pollution
Montiel et al., 2019	In learning spaces	cognition	Sustainability	Noise exposure
Basner et al., 2013	Environment of hospital	Annoyance, disturbs sleep, performance, mental health	Public health	Noise exposure
Hagood, 2011	Noise-canceling headphones, which are designed to dramatically reduce the wearer's perception of ambient sound	Reduce ambient noise for the user	Noise and mobile production of personal space	Noise cancellation
Kamp et al., 2013	Noise in the home and school environment	Disturbed sleep, Cognitive development, and health	Acoustics society	Noise exposure
Gray et al., 2001	Innumerable natural sounds from nature	Unsp.	Biology and music	Soundscape
Verduyck et al., 2019	The sound environment of schools	Stress, mental and physical fatigue in children and teachers and disrupt student learning	Acoustics	Environment sound
Clark & Paunovic, 2018	Environmental noise from road traffic, aircraft, railway, wind-turbine	Quality of life, well-being, and mental health	Environmental research and public health	Environmental noise
Downs et al., 2010	Ambient	Improving Sleep in the ICU and health care system	Psychology	Ambient sound
Mehta et al., 2012	Ambient	Affect Creativity	Consumer research	Ambient noise

Authors	Sound relates	Outcomes	Research area	Context
Chattopadhyay, 2017	Sound record from film site, location, or space.	Emerging spatiality and public-ness in sound artworks	Communication and the public	Ambient sound
Schreckenber, 2017	Aircraft noise	Annoyance, stress, mental and psychological health, well being	Psychology, environmental and social	Environmental noise
Ratcliffe, 2021	Acoustic from environment	Theoretical development for broader restorative environments research	Psychology	Soundscape
Alvarsson et al., 2010	Sound from nature and noisy environments	stress	Environmental research and public health	Nature sound
Luo et al., 2021	Acoustic properties of the natural environment	Impact on quality of life	Psychology	Nature sound
Shu & Ma, 2019	Surrounding location and circumstances	Reduce stress	Environmental research and public health	Ambient sound
Davis & Nussbaum, 2008	Nature sounds in healthcare	Effects emotional and abstract thought before physiologic responses occur	Health	Ambient sound
Shoemark et al., 2016	Ambient sound environment in intensive care wards	Reduction in the number of noise events	Public health	Ambient sound
Luo et al., 2022	Exposure to nature sound through a mobile application	Learning performance among university students	Environmental research and public health	Nature sound
Emfield & Neider, 2014	Nature sound such as birdsong	Acute exposure to relaxing pictorial and auditory stimuli is insufficient to induce improvements in cognitive performance	Psychology	Nature sound
Dohmen et al., 2022	Unsp.	Cognitive Performance and Helplessness in Childhood	Environmental research and public health	Noise exposure
Gordon and Marshall, 2023	Interventions of ambient sound for mental health apps	feasibility and acceptability were high based on recruitment, uptake, and retention.	Public health	Ambient sound, nature sound
Haruvi et al., 2022	popular music playlists engineered personalized soundscapes	personalized soundscapes focused significantly above silence	Environmental research and public health	soundscape
Rahman et al., 2021	music containing a somber tone, or familiar popular music	music containing a somber tone, or familiar popular music with a high level of valence can help improve focus.	Environmental research and public health	Environmentally sound

Authors	Sound relates	Outcomes	Research area	Context
Almberg et al., 2021	Listening to Ambient sound	observations suggest a possible relationship between acoustic interruptions and worsened perceived sleep.	Environmental research and public health	Ambient sound

Note. Unsp.: unspecified

### 3.2 Theoretical foundations and concepts associated with ambient sound (RQ1)

There were discrepancies in the definition and theoretical underpinning of the many terminologies that reflected the idea of ambient sound. *Noise pollution*, according to Thompson et al. (2021) is a problem in many areas with a human population since it is caused by social, industrial, and transportation activities. Humans are exposed to various environmental hazards and comforts, such as noise pollution from motorized road traffic (Bloemsa et al., 2022). It may also be described as an obtrusive, loud sound emanating from the vehicle (Schubert, 2019). Noise pollution, often known as unwelcome and upsetting sound, permeates modern life. Road traffic, aircraft, buildings, landscaping, and other artificial noise sources pose dangers to the health of people and wildlife, particularly in and around cities where noise pollution is most prevalent (Zipf et al., 2020). Noise levels over 55 dB are considered bothersome for the ears' comfort. As a result of population increase, urbanization, and technological advancements, noise pollution is continuously increasing in scope, frequency, and intensity (Dhzambov & Dimitrova, 2014). While *natural ambient sound* is defined by Boersma (1996) as noise that is unidentifiable and generated by both human and human sources.

*Environmental noise* is defined by Michaud et al. (2022) as a noise nuisance. It is typically understood as a self-reported unfavorable response to unwanted noise and encompasses a range of reactions that bother, disturb, or annoy a person. Most studies examined road traffic noise in Belgium, Bulgaria, Canada, Finland, Germany, Netherlands, New Zealand, Norway, South Korea, and the United Kingdom (Clark et al., 2020). According to Minichilli et al. (2018), noise is acknowledged as a significant environmental problem that impacts people's quality of life and welfare, especially in metropolitan settings. When noises are undesirable or damaging, they are considered noise. Several human activities produce noise, and exposure to it on a large scale from transportation is particularly concerning (Jarosinska et al., 2018). Reactions to environmental noise depend as much on the person as on the type and level of noise (Godlee, 1992). There has been research on the impact of environmental noise, such as that from trains, planes, and wind turbines, on quality of life, according to Clark and Paunovic (2018). One environmental stressor that has been identified is noise.

*Noise exposure*, as defined by Alhenieidi & Smith (2010), is a noise that acts as an additional source of information and demands additional resources. According to Sheperd et al. (2013), noise nuisance is "...when any noise or vibration occurs in or is transmitted from any building, premises, or land to a degree that is likely to constitute injurious to health." This definition is taken from the New Zealand Health Act (1956). Basner et al. (2013) defined noise as unwanted sound. A few papers discuss the environmental stressor of community noise is acknowledged to induce annoyance, diminished well-being, and possibly non-auditory negative impacts on health (Luszczynska et al., 2014). Kempen et al., (2006) state that 30% of the European Union's population is exposed to road traffic noise levels of more than 55dB(A). A cascade of events leading from noise exposure to short-term and long-term health repercussions is possible. It is presumable that feedback mechanisms and mitigating factors exist, meaning that noise may indirectly negatively impact health (Kamp et al., 2013). *Environment sound*, according to Restrepo et al. (2015) is a type of sound that gives a space a particular character and determines whether or not the people who occupy it find their hearing to be pleasant or bothersome. This implies that sound significantly impacts how a space is defined. However, Verduyck et al. (2009) claim in their study that the typical sound levels in classrooms are well over the necessary 40–60 dBA for clear speech intelligibility, making the sound environment of schools worrying throughout the world.

*Acoustic and auditory*, the idea is based on the soundscape theory, and the author identified R. Murray Schafer as the term's originator in the 1960s and 1970s. It is speaking of the acoustics of the surroundings or locations. Examples include making positive and negative distinctions between settings where sound overlapped less frequently and those where it diminished aural clarity. (2015) Blake and Cross. Studies of environmental sound have also been influenced by the dichotomy of soundscapes, such as sound and quiet, indoor or outdoor sounds, pleasant and unpleasant sounds, urban and rural sounds, and human-made and nonanthropogenic "natural" sounds. *Nature sound*, according to Bogdanov et al. (2022), the presence of nature sounds such as bird songs, water lapping, and wind in trees is known to improve well-being. While technology noise is generally seen as an unpleasant component of the sound environment, natural noises are typically considered pleasant, according to Alvarsson et al. (2010). Based on the review paper by Luo et al. (2021) on nature sound, which only includes the acoustic properties of the natural environment, is perceived to be pleasant and relaxing and has a link with perceived restoration. According to the review, the psychological and cognitive effects of exposure to nature have been supported by two widely recognized theories, i.e., stress recovery theory (SRT) and attention restoration theory (ART), and were examined in many empirical studies (Luo et al., 2022). Nature sound, such as birdsong, are perceived to be restorative (Ratcliffe et al., 2013).



*Noise cancellation* is defined as reducing the wearer's perception of ambient sound using a gadget which as headphones. In the context of noise cancellation headphones by Bose Corporation, they use soundscaping as a term defined as technological fabrication of physical and psychological space through the aural (Hagood, 2011). *Soundscape* is the acoustic environment perceived, understood, and/or experienced by people (Ratcliffe, 2021). Our world is filled with innumerable natural sounds, and from the earliest times, humans have been intrigued and inspired by this soundscape. Gray et al. (2001) state that people who live close to nature perceive a wider range of sounds than those of us living in industrialized societies, who rely heavily on advances in sound technology. Numerous studies have documented the positive effects of interacting with natural environments (Shu & Ma, 2019).

*Ambient sound*, the concepts of psychoacoustics, which are the capacity to produce spatial perceptions through the interaction of sound, hearing, and the "mind's eye," are applied by ambient sound technology (Davis & Nussbaum, 2008). Ambient sounds are defined in the context of the film as sounds that are captured from a location, though in the context of sound art, this location is one where field recordings are made to develop the production of a sound work through artistic intervention and transformation of the location (Chattopadhyay, 2017). The sound of a specific area or space is what is meant by the term "ambiance" in the context of filmmaking. This definition links the concept of ambiance to related concepts like environment, atmosphere, and background sound. On the other hand, the term ambient noise, according to Mehta et al. (2012), is any undesirable sound.

In conclusion, the proposed definition of ambient sound highlights its role as the comprehensive auditory backdrop that shapes individuals' perceptions, understanding, and experiences of a specific location, incorporating various elements such as natural sounds, background noises, and human-generated sounds. This definition underscores the significance of ambient sound in shaping the overall sonic atmosphere and cultural interpretation of a particular space.

### 3.3 Cultural interpretation of how ambient sound being defines and perceived, and how it shapes human life (RQ2)

The cultural interpretation of ambient sound encompasses the diverse ways individuals from various cultures understand, define, and perceive sounds in their environment. Culture significantly shapes sensory experiences, influencing interpretations of different sounds. Cultural contexts provide unique perspectives on what sounds are pleasant, disruptive, or meaningful. For example, nature sounds, urban noises, or religious activities may hold distinct interpretations across cultures (Aletta, Oberman & Kang, 2018; Bartalucci & Luzzi, 2020). Additionally, ambient sounds often carry symbolic meanings within cultural contexts, with rituals and traditions incorporating specific sounds that contribute to the cultural identity of a community

(Bartalucci & Luzzi, 2020). Communication patterns and aesthetic preferences for sounds vary widely among cultures, impacting emotional responses and attitudes toward the environment (Qi Meng et al., 2020). Recognizing these cultural nuances is crucial for designing culturally sensitive ambient sound interventions, ensuring inclusivity and respect for diverse interpretations of sound.

In the cultural context, different cultures have unique perspectives on what is considered pleasant, disruptive, or meaningful regarding sound. For example, the sounds of nature, urban environments, or religious activities may be interpreted differently across cultures, while for symbolism and meaning, Ambient sounds often carry symbolic meanings within a cultural context. For instance, bells may signify religious rituals in one culture, while it might have a different meaning or association in another. Cultural rituals and traditions often involve specific sounds. These sounds can evoke emotional responses and contribute to a community's cultural identity. Understanding these associations is crucial for considering ambient sound in various settings.

In some cultures, ambient sounds may be an integral part of communication. For instance, bustling market sounds may convey vitality and energy in one culture, while silence may be valued as a sign of respect in another. Aesthetic preferences for sounds can vary widely. Some cultures may appreciate harmonious and melodic sounds, while others may embrace a cacophony of noises as part of their daily life. Cultural attitudes toward the environment can also influence how ambient sounds are perceived. For example, sounds associated with nature may be cherished in cultures with a strong connection to the natural world.

Different cultural perspectives contribute to the understanding and perception of ambient sound, including noise pollution, environmental noise, noise exposure, acoustic and auditory aspects, nature sound, noise cancellation, soundscape, and ambient sound itself. Based on the literature reviewed in this study, the following table below presents the cultural interpretation of how ambient sound is defined and perceived and its influence on human life.

*Table 3: Cultural interpretation of how ambient sound being defined and perceived*

Author	Impact on human	Cultural interpretation of how ambient sound being defines and perceived
(Thompson et al., 2021; Bloemsmas et al., 2022; Schubert, 2019; Zipf et al., 2020; Dzhambov & Dimitrova, 2014; Luszczynska et al., 2018)	Poses a significant problem in many areas with a human population. It is recognized as an unwanted, obtrusive, and detrimental sound that can impact human health and quality of life	Cultural interpretations of noise pollution shape individuals' responses and experiences of soundscapes in their environment

Author	Impact on human	Cultural interpretation of how ambient sound being defines and perceived
(Michaud et al., 2022; Clark et al., 2020; Minichilli et al., 2018; Restrepo et al., 2015; Jaronsinska et al., 2018; Godlee, 1992; Terzakis et al., 2022; Verduyck et al., 2019; Clark & Paunovic, 2018; Schrenkenberg et al., 2017)	encompasses the subjective and unfavourable responses to unwanted noise. It includes reactions that bother, disturb, or annoy individuals and is influenced by both personal factors and the characteristics of the noise itself	Cultural perspectives influence how environmental noise is perceived and the extent to which it affects individuals' well-being
(Cayir et al., 2018; Foulkes et al., 2019; Alhenieidi & Smith, 2020; Shepherd et al., 2013; Luszczynska et al., 2014; Kampen et al., 2006; Montiel et al., 2019; Basner et al., 2013; Kamp et al., 2013; Dohmen et al., 2022)	noise acting as an additional source of information that demands additional resources	It can have both direct and indirect effects on human health, and the perception of noise as an environmental stressor varies across cultures
(Blake & Cross, 2015)	the examination of how sound overlaps, diminishes aural clarity, and influences the perception of settings	Cultural interpretations influence the categorization of sounds as positive or negative and shape the acoustic environments of different spaces
(Boersma, 1996; Bogdanov et al., 2022; Alvarsson et al., 2010; Luo et al., 2021; Luo et al., 2022; Emfield & Neider, 2014)	including sounds like bird song, water lapping, and wind in trees, is known to improve well-being and is generally perceived as pleasant	Cultural perspectives influence the significance attributed to natural sounds and their impact on human experiences
(Hagood, 2011)	aims to reduce the perception of ambient sound and create a fabricated physical and psychological space through aural manipulation	Cultural interpretations shape the use and acceptance of noise-cancellation technology in different contexts
(Gray et al., 2001; Ratcliffe, 2021; Shu & Ma, 2019)	acoustic environment as perceived, understood, and experienced by people, acknowledges the diverse range of sounds present in our world	Cultural factors influence individuals' interactions with the soundscape and their perceptions of natural and technological sounds

Author	Impact on human	Cultural interpretation of how ambient sound being defines and perceived
(Boersma, 1996; Coval & Shumway, 2001; Downs et al., 2010; Mehta et al., 2012; Chattopadhyay, 2017; Sayin et al., 2015; Davis & Nussbaum, 2008; Shoemark et al., 2016; LeNestour et al., 2021)	associated with the capture and transformation of location-specific sounds to create an ambiance or background sound, the frequency of sound can have implications for the listener, determining whether it is perceived as necessary or unnecessary	The understanding and interpretation of ambient sound vary across cultural contexts and artistic practices

In summary, the results of this review indicate that noise pollution is a significant problem that negatively impacts human health and quality of life, while cultural interpretations shape individuals' responses and experiences of soundscapes in their environment. Additionally, the perception of environmental noise varies across cultures, and cultural factors influence the use and acceptance of noise cancellation technology and the significance attributed to natural sounds.

#### 4. DISCUSSIONS

This systematic review identified 46 articles exploring ambient sound on humans and its impacts on psychological and physiological. The focus of this review is to determine the definition and concepts underlying ambient sound impacts on well-being, which, according to Dunn (1973) well-being, integrates mind and physical health, resulting in more holistic approaches to disease prevention and health promotion. The philosophy behind ambient sound in human history is rooted in the understanding that sound is an integral part of our environment and human experience. The findings from the exploration of theoretical foundations and concepts associated with ambient sound (RQ1) and the cultural interpretation of how ambient sound is defined and perceived, and how it shapes human life (RQ2) shed light on the multifaceted nature of ambient sound and its impact on individuals within different cultural contexts.

The research question concerning the theoretical foundations and concepts associated with ambient sound revealed discrepancies in the definition and theoretical underpinnings of various terminologies related to ambient sound. Terms such as noise pollution, environmental noise, noise exposure, and acoustic and auditory aspects were discussed, highlighting their significance in understanding the nature and impact of ambient sound. It became evident that noise pollution, resulting from social, industrial, and transportation activities, poses a significant problem in areas with human populations. Noise pollution is widely recognized as unwanted, obtrusive, and detrimental sound that can have adverse effects on human health and quality of life (Thompson et al., 2021; Bloemsma et al., 2022; Schubert, 2019; Zipf

et al., 2020). Additionally, the concept of environmental noise was explored, emphasizing the subjective and unfavorable responses to unwanted noise and the role of cultural perspectives in shaping individuals' experiences of noise within their environment (Michaud et al., 2022; Minichilli et al., 2018; Jarosinska et al., 2018).

The cultural interpretation of ambient sound further reinforced the notion that cultural perspectives are crucial in shaping how ambient sound is defined, perceived, and experienced. Different cultural contexts contribute to diverse understandings and interpretations of ambient sound and its related terminologies. Cultural factors influence responses to noise pollution, environmental noise, and noise exposure, highlighting the subjective nature of individuals' experiences and the varying levels of impact on well-being across cultures (Clark et al., 2020; Godlee, 1992; Clark and Paunovic, 2018; Kempen et al., 2006). Moreover, cultural perspectives shape the categorization of sounds as positive or negative, influencing the acoustic environments of different spaces and the significance attributed to natural sounds, such as bird songs, water lapping, and wind in trees (Bogdanov et al., 2022; Alvarsson et al., 2010; Luo et al., 2021; Ratcliffe et al., 2013). The cultural acceptance and utilization of noise cancellation technology, as well as the understanding and interpretation of ambient sound within the context of filmmaking and sound art, were found to be influenced by cultural factors (Hagood, 2011; Chattopadhyay, 2017; Ratcliffe, 2021).

Integrating the findings from both research questions underscores the complexity of ambient sound as a multidimensional phenomenon. The theoretical foundations provide a framework for understanding the technical aspects and definitions of ambient sound. At the same time, the cultural interpretation highlights the role of cultural perspectives in shaping human experiences and responses to ambient sound. Cultural factors influence individuals' perceptions, attitudes, and interactions with ambient sound, shaping their overall experiences and well-being. The implications of these findings are significant, particularly in urban environments where noise pollution is prevalent. Understanding the cultural interpretation of ambient sound can aid in developing effective strategies and interventions to mitigate the negative impacts of noise pollution on individuals' health and quality of life. Furthermore, recognizing the cultural significance of natural sounds and the potential benefits of incorporating nature soundscapes in urban settings can inform urban planning and design practices to create more harmonious and livable environments.

It is important to note that further research is needed to delve deeper into specific cultural contexts and their unique interpretations of ambient sound. Additionally, exploring the relationship between ambient sound, cultural identity, and social factors would provide a comprehensive understanding of how ambient sound shapes human life within diverse cultural landscapes. In conclusion, combining theoretical foundations and cultural interpretations provides a

holistic perspective on ambient sound. This interdisciplinary approach enhances our understanding of the complexities and nuances of ambient sound, highlighting the need for context-specific interventions and design strategies that consider cultural perspectives to create more sustainable and inclusive environments.

## 5. CONCLUSION

In conclusion, this systematic review has provided a comprehensive overview of the concept of ambient sound and its impacts on well-being. The study highlights the discrepancies in the definitions and theoretical foundations of various terminologies associated with ambient sound. Furthermore, the review emphasizes the importance of recognizing the negative impacts of noise pollution and environmental noise on well-being, as well as the positive effects of natural sound. The findings suggest that exposure to ambient sound can have significant impacts on various domains of well-being, including brain function and cognition, sleep, stress levels, physical and mental health, and creativity, which lead to quality of life.

The review also identifies technological advancements that have been developed to reduce the negative impacts of ambient sound on individuals. This review suggests a future study that focuses on the effect and the needs in any context to enhance the ambient sound impacts on a specific population and the potential benefit of ambient sound as a background sound within a various settings such as therapeutic environment. Finally, the study concludes that further research is necessary to better understand the impacts of ambient sound and develop strategies to mitigate its negative effects and enhance its positive effects.

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