

Music Like Water:
Exploring the Functions of Music Through Thematic Bibliometric Analysis and
Comparative ESM Study

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Abstract

Music has always been a functional, utilitarian resource, allowing for bonding, interaction, identity creation, and myriad additional functions for individuals and wider society. Since Alan Merriam's pioneering work suggesting a delineation between concepts of music *use* and *function*, researchers have continued to identify a range of functions of music. Yet, two issues pervade the field; firstly, the issue of a universally accepted definition of function, and secondly, the lack of consensus between researchers as to what the functions of music are. This research aims to identify the functions of music in everyday life, grounded in the underlying contention that music is a resource employed by listeners to achieve context-dependent goals: a process referred to as *music-facilitated goal attainment*.

This thesis addresses these issues with a preliminary theoretical investigation, followed by a mixed-methods experimental phase, and then a final grouping phase. Firstly, employing a qualitative approach to construct a pseudo-consensus, a bibliometric study was conducted and identified 52 publications containing 807 references to functions of music. The contents of the publications were examined and categorised using thematic analysis. When sorted and compiled, 45 distinct functions of music were identified. The outcome is described and visualised, forming a 'Aggregate Thematic Functions Framework' (ATFF).

The second research phase utilised an experience sampling methodology study to confirm the validity and parity of the ATFF with the experience of real-world listeners. Participants reported music selection criteria, situational goals, activities, and locations. The resulting data were analysed using the same methodology as the previous analysis phase. 44 distinct functions of music were identified. These were then combined with the ATFF functions, resulting in a 'Consensus Functions Framework' (CFF). When compiled, 53 distinct functions of music are included in the CFF. The thesis also provides an extensive exploration of the contextual variables informing goal-orientated listening and a potential methodology for further investigation of the phenomenon.

Keywords: *listening, functions of music, music-facilitated goal attainment, goal orientation, experience sampling, context, location, activity*

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Declaration

I declare that this thesis is a presentation of original work and I am the sole author. This work has not previously been presented for an award at this, or any other, University. All sources are acknowledged as references.

Elements of the thesis (particularly preliminary findings from chapters 4 and 5) were published in a journal article and conference proceedings listed below. However, it should be noted that these publications present older iterations of the studies and findings.

List of Publications:

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Graz.

1.1 Introduction

7:15am — The alarm goes off and you pad to the kitchen. As you prepare breakfast you switch on the DAB radio on the kitchen worktop. Over the sound of the kettle boiling you catch strains of the rondeau from Poulenc's *Les Biches*. You enjoy the music, but it could be anything. It is just there as a pleasant accompaniment to the start of your day.

8:10am — As you board your train into the city centre you open the music app on your mobile device. Scrolling through a list of the hundreds of playlists you've created, you select your 'Rainy Day Pop' playlist and hit the shuffle button. You skip through several pieces until your ears are filled with Fleetwood Mac's *Dreams*. The rumble of the train is buried beneath Stevie Nick's ethereal vocal as rain drips down the outside of the window. You think to yourself just how cinematic it all seems.

10:54am — At the office. You sit at your desk and work to Steve Reich's *Music for 18 Musicians* streamed from Spotify through your Bluetooth headphones. The repetitiveness and the lack of lyrics helps you focus on writing this document. The headphones signal to others that you are busy and not interested in hearing gossip from the office party.

5:03pm — Slip on your running shoes, grab your bag from under your desk and head to the gym. As you hit the 35-minute mark of your running programme your mobile device measures your heartrate and pace and recognises that you are slowing down. To counter this your running app tells your music app to play one of your 'power songs'. David Bowie's *Heroes* is exactly what you need to give you an energy boost.

7:42pm — In a taxi heading to the city centre for drinks. Your taxi driver is blaring Omar Souleyman's *Warni Warni*. You start a conversation about the music, and he explains to you that he is from Syria. He says he loves listening to this while he works because it reminds him of his family home over 3000 thousand miles away.

Music is now a ubiquitous resource. It is as readily available as water (Kusek and Leonhard, 2005). It soundtracks our daily lives and is carried with us as an essential item that can guide us through the world. It is a totem that imbues us with the power to shift our emotions, cognition, physiology and behaviours at whim. As we navigate our daily lives, we encounter many instances of music: some are innocuous or irrelevant, and are entirely isolated from the real-world concerns of the moment, whereas others are integral to our everyday experience. In some circumstances, the very presence of music changes a moment or situation. In the short vignettes above we can see examples of both extremes. Breakfast would be almost entirely unaffected by the absence of music, yet by simply listening during mundane tasks, we can add a new dimension of activities. Other moments of music listening change or enhance the situation for us as participants or observers. A train journey can take on dramatic, filmic qualities simply by drowning out the world around us, and generate a soundtrack to one's own life through

ubiquitous technological augmentation. Some events might even rely entirely on the presence of music. Exercise is enhanced by music, helping individuals to set their pace or gain a new sense of energy through listening, and conversations can be facilitated by the presence of music. Music and its associated technologies can act as signifiers to others that interaction is not desired or create spontaneous moments of conversation. These vignettes may have appeared very differently had the context or music been altered; the interplay between music, context, and the listener creates unique moments.

Yet, obscured behind each of these moments is an implicit and axiomatic concept that is rarely considered by listeners. This unquestioned notion concerns the ‘why’ of listening. We do not listen at random, we do not select any music for any context, we do not listen to any music at any moment in an arbitrary fashion, and we certainly do not listen without a reason for doing so. Even ‘piped’ music in supermarkets and elevators is not random, as it serves a purpose (although perhaps not for the listener). The elemental core of listening is as a goal directed process: we listen to aid our everyday goals (Sloboda, O’Neill and Ivaldi, 2001, p. 11). Further to this, is the complex layering of influencing variables drawn from variation across contexts and individuals that coalesce to bring nuance to the goals listeners employ music to fulfil.

A considerable body of research relevant to the question of ‘why we listen’ has developed since the late 1960s (arguably beginning with Alan P. Merriam’s *The Anthropology of Music*). Since this time, scholars have performed research into goal setting and orientation (Bandura, 1978; Locke, 1991; Locke and Latham, 2002), emotional regulation (Gross, 2002; Scherer, 2004; Saarikallio and Erkkila, 2007; van Goethem, 2010; Thoma *et al.*, 2012), broader self-regulation through listening to music (Isen, 2000; Baumeister and Vohs, 2007; Saarikallio, 2011; Van den Tol, 2012; Elvers, 2016b; Saarikallio, Baltazar and Västfjäll, 2017), and most notably into the functions of music (Merriam, 1964; Sloboda, O’Neill and Ivaldi, 2001). The functions of music have been approached from varying disciplines such as social functions (Hargreaves and North, 1999; North, Hargreaves and Hargreaves, 2004; Clayton, 2008; Boer, 2009; Boer and Fischer, 2012), physiological functions (Priest, Karageorghis and Sharp, 2004; Karageorghis and Terry, 2009; Laukka and Quick, 2013), psychological functions (Alea and Bluck, 2003; Laiho, 2004; Clarke, Dibben and Pitts, 2010; Schäfer *et al.*, 2013), and emotional functions (Sloboda and Juslin, 2001; Lonsdale and North, 2011; van Goethem and Sloboda, 2011; Groarke and Hogan, 2016).

However, although these researchers offer many rationales for listening and describe what listening can do for us, their findings are unaligned, and in some instances, highly incongruent. This may stem, in part, from the disparate nature of the various research methodologies in play. As readily observable in Schäfer *et al.*'s 2013 bibliometric analysis of the field of the functions of music, many publications vary drastically in their findings and terminology. The work of Hargreaves and North, 1997; DeNora, 2000; Juslin, 2012; Sloboda, Lamont and Greasley, 2012 and others have presented insightful explorations of the use of music in everyday life, but all from different, and sometimes conflicting perspectives (such as music psychology, sociomusicology, phenomenology, and neuroscience). As yet, there is no analysis from an interdisciplinary vantage point that attempts to synthesise a congruent model of music's utility. Furthermore, no attempts have been made by Schäfer *et al.* or other researchers to construct any meta-analyses of the body of research. As such, in a field filled with rich qualitative data and significant quantitative analyses, there exists no unified approach to study methodologies or epistemologies, and no field-wide consensus as to why we listen (and especially no consensus as to why we listen *in context*). As will become apparent in later chapters, even aspects of terminology are not standardised. In essence, researchers do not agree about why we listen or, to offer an alternative phraseology, researchers do not agree upon the everyday goals that music listening can aid with that accounts for contextual variables.

This thesis addresses this incongruency. The research is primarily concerned with detailing music as a utilitarian resource that listeners employ in everyday life, and codifying listening praxis. Therefore, to approach this issue, the thesis poses the question: would it be possible to 'force' the extant research into a pseudo-consensus? Could the pool of findings from many different researchers and disciplines be compiled to express the broadest and most comprehensive taxonomy of the functions of music to date? Furthermore, how might such a taxonomy fit with the prevailing theory of music-facilitated goal attainment listening? If such a framework could be synthesised, this consensus taxonomy would be constructed using unaligned theoretical and experimental or observational data. Hence, if such a consensus were created, how could its validity and reliability be confirmed as it pertains to the real-world experience of listeners in the everyday?

As such, this thesis questions how listeners use music in everyday life to aid in contextually-rooted goals, and how such processes should best be conceptualised.

1.2 Aims & Objectives

The thesis was governed by four key aims that address the questions posed above. These aims were sequential. Compartmentalised within each aim are several objectives, which provided a process-driven approach to achieving each aim. The final outcome of the aims lead to the development of a model of music-facilitated goal attainment, and to a taxonomy of the functions of music.

Aim 1 (A1): To theoretically model and describe contextualised music-facilitated goal attainment

Objective 1 (O1): *Critically interrogate music-facilitated goal attainment and the potential influence of contextual variables in goal orientation*

Objective 2 (O2): *Interpolate and develop a theoretical model of the interactions between situation, music, listener, and goal orientation*

Objective 3 (O3): *Explore and develop working definitions of the uses and functions of music*

This aim and its objectives were concerned with building a coherent and robust body of theory that could accurately and appropriately define and express the processes involved in goal-orientated listening. This encompasses music-facilitated goal attainment and the influences of contextual variables, and explores the functions of music as both a theoretical lens and conceptual grounding.

Aim 2 (A2): To construct a taxonomy of the functions of music from the extant research literature

Objective 4 (O4): *Create and fully describe a consensus taxonomic framework of the functions of music in everyday life*

This aim and its objective were concerned with the construction of a ‘pseudo-consensus’ (i.e. a consensus without agreement from the source researchers) describing the functions of music in everyday life as it exists within the extant published research. Encompassed within this aim and objective are searches for relevant published literature, sorting and filtering methods, examination of the overall bibliometric data, methodological considerations and approaches to compiling the taxonomy, and a thorough qualitative examination of the individual functions of music identified within the taxonomic framework.

Aim 3 (A3): To confirm the validity and parity of the proposed taxonomy of the functions of music with ecologically valid data

Objective 5 (O5): *Test the robustness of the proposed taxonomy of the functions of music (O4) in real-world scenarios through experience sampling methodology*

Objective 6 (O6): *Analyse and combine findings from the proposed taxonomy of the functions of music (O4) and real-world study data (O5) to refine a final taxonomy of the functions of music*

This aim and its objectives were concerned with testing the proposed consensus against real-world data and developing a finalised taxonomy of the functions of music.

However, gathering ecologically valid data had to occur first, and such data was then used as a parity measure for the established consensus. The findings of the pseudo-consensus taxonomy and the real-world study data were then combined to offer an accurate taxonomy of the functions of music that offers rich descriptive information about each function.

Aim 4 (A4): To present a final model of contextualised music-facilitated goal attainment

Objective 7 (O7): *Expand a final theoretical model of the interactions between situation, music, listener, goal orientation (O2), and the taxonomy of the functions of music (O6)*

This aim and its objective were concerned with expanding the previously established model of music-facilitated goal attainment and incorporating the theory and findings identified in the taxonomic studies of the functions of music, into a final holistic model that expresses how we listen to achieve goals within a given context.

1.3 Domain of Study and Investigatory Approaches

Identifying a particular discipline from which to engage with the subject presented an issue for the work. The questions raised in the preceding section and expressed in the aims and objectives of the project are not readily situated within any one discipline. Furthermore, the discipline that underpins the research would, by necessity, inform the epistemological grounding of the work, and potentially impact any novel contribution and findings presented in the thesis.

The questions posed within this thesis concern many fields of study. The examination of the utilitarian nature of everyday music listening was most appropriately approached from the

established music psychology and music and emotion literature. However, the broader questions concerning the role of music in everyday life were addressed from music sociology or music psychology. As such, no singular discipline was capable of adequately approaching the breadth of this thesis. Hence, an interdisciplinary approach, drawing together many differing disciplines as a holistic lens, was the only feasible course of action. Klein and Newell (1996) define interdisciplinarity as:

A process of answering a question, solving a problem, or addressing a topic that is too broad or complex to be dealt with adequately by a single discipline or profession...

Interdisciplinary study draws on disciplinary perspectives and integrates their insights through construction of a more comprehensive perspective. (Klein and Newell, 1996, p. 3)

Therefore, the interdisciplinary perspective proposed would allow for an alternative conception of everyday music listening to unfold. Such an approach did not limit the potential disciplines of investigation to those discussed here, and therefore allowed for additional, possibly even disparate, areas of research to be exploited during the ensuing investigation. As such, the broad range of defined and potential disciplines should be termed 'listening studies' under the wider musicological discipline, as this interdisciplinarity allowed for a greater focus to be placed on the act of listening and its associated experiences, with less emphasis placed on the analytical or compositional structures of music.

Consequently, the interdisciplinary approach outlined above, necessitated by the lack of an extant field of study, required an epistemological philosophy that allowed the varied research to be employed appropriately across disciplinary lines. Given that pragmatism sidesteps "the contentious issues of truth and reality" (Feilzer, 2010, p. 8), a pragmatist approach would allow for several systems of investigation to exist concurrently. With such a paradigm, both qualitative and quantitative research methods were practicable tools with which to examine the questions raised here, as were multiple divergent research approaches: deductive or inductive inquiry. As such, abductive reasoning may fit best with pragmatist epistemologies given they "focus on 'what works' as the truth" (Tashakkori and Teddlie, 2003, p. 713). However, within a pragmatist paradigm such investigatory approaches can vary as required. Particularly pressing here was the potential subjectivity of interpretation concerning the experience of listening, and

the possibility of a pragmatist paradigm to allow for novel approaches to the potential disparity between multiple listeners.

This thesis positioned itself as an interdisciplinary study, was situated under the broader field of 'listening studies', and employed a pragmatist epistemological paradigm.

1.4 Situating the Research

Listening in the twentieth century can be viewed through the lens of technological change and adoption (Kassabian, 2013), and technological developments can account for greater numbers of individuals and groups engaging with music (Tepper, Hargittai and Touve, 2008, p. 199). Technology also enabled greater flexibility and choice for listeners (Bull, 2006), and as the century progressed, portability and practicality became more intertwined (Taylor, 2014, p. 5). Consequently, the diffusion of technology in the twentieth century has radically altered music appreciation and engagement (Konecni, 1982; Tepper and Hargittai, 2009). Our listening technologies have significantly altered our listening:

How we listen to music could be, for perhaps the first time in centuries, every bit as important to its history and evolution as what the composer intends when writing music. (Ratliff, 2017, p. 4)

Internet connected devices now account for over 50% of all listening devices used to engage with music (International Federation of the Phonographic Industry, 2019, p. 11) and 89% of listeners now use some form of mobile streaming platform (ibid. p. 9). The increasing role of A.I. in music recommendation (e.g. Schedl, 2019) is becoming one of the standard methods we use to select our listening. Hence, we are heavily reliant on technology to enable us to move around the world and our everyday lives whilst engaging in ubiquitous listening.

Therefore, this thesis positions itself as an exploration of the current state of our listening. This thesis explores functional listening, and such listening is clearly tied to the availability of music. Indeed, there is no research into functional listening before the development of the compact audio cassette (the founding publication for the functions of music as a field was in 1964). Therefore, this work grounds its research and findings in contemporary Western developed society, at a time and place where our listening is increasingly complex and interrelated, and supplied through often invisible mechanisms (streaming, WiFi, mobile internet etc.). The real-

world studies performed within this thesis took place in 2017, and as such the findings represent a (at the time of writing) contemporaneous view of everyday listening.

Furthermore, in the studies and final taxonomic framework presented in this thesis, the research is reliant on real-world data collected from ‘highly engaged’ listeners (i.e. those who elect to listen many times in a day and consider music an important part of their life). This does not restrict the findings to a particular place and time where the data was collected but should be considered broadly indicative of listening behaviour across contemporary Western societies. The specifics of this listening data are never purported to be universal in nature (such as what listening occurred, the exact contexts, lengths and frequencies, genres etc.) but should be considered accurate as it pertains to the data required to construct a working taxonomic framework. All listening is bound by individualistic, temporal, contextual, and idiosyncratic variations, but the broad reasons for listening and functions music serves should be considered ubiquitous across similar Western contexts.

Finally, research into listening and the possible outcomes music can have on everyday life (as it pertains to mood, socialising, bonding, mental health, wellbeing etc.) has become a broad and increasingly popular field of research. However, research often attempts to query the processes by which such outcomes are achieved or by what mechanism effects are induced. This is often at the detriment of the practicalities of the significant outcomes for music has for listeners. Surely, it is far more useful to identify which strategies, approaches, or modes of listening are in action in the real-world and to understand these outcomes, than it is to build a model that attempts to explain regulatory listening itself. As will be shown, we lack a consistent taxonomy or framework of what listening can actually achieve. Without such a taxonomic framework, understanding the processes by which outcomes are achieved can only reveal half of the picture. Process-targeted research only allows us to perceive the ‘how’ of goal-orientated listening and not the ‘what’ or ‘why’ of the listening episodes. Why *do* we listen?

1.5 Structure of Thesis

To allow for greater understanding of the structure of this thesis, the following is a summary of the content of each chapter with a view to its key contributions to the overall research.

Chapter 2. Music & Utility

The literature review begins with an exploration of the role of music listening as a tool for goal attainment. Firstly, the chapter introduces the axiomatic notion that music's ubiquity is a product of its ability to aid us in achieving everyday goals. The chapter then continues to explore differing aspects of music-facilitated goal attainment, before detailing the influence of contextual variables on listening. The chapter concludes with a discussion of a theoretical model of the interactions between situation, music, and listener that succinctly expresses music-facilitated goal attainment.

Chapter 3. The Uses & Functions of Music

With the 'purpose' of listening defined, it was then possible to explore the specifics of music-facilitated goal attainment. This chapter does so by scrutinising the history and development of the functions of music as an area of research. The chapter presents the importance of definitions and terminology, and highlights the issues with such terminology in the extant literature. The chapter then offers a review of the key studies into the functions of music.

Chapter 4. Study 1: Aggregate Thematic Functions Framework

Study 1 offers a problematisation of the previously established theory and proposes the lack of parity across research into the functions of music can be forced into a pseudo-consensus. The chapter presents a rationale, methodology, analysis and discussion of a thematic qualitative bibliometric study of the literature examining the functions of music. The chapter presents an in-depth thematic analysis of the functions of music and presents them within a newly proposed consensus taxonomic framework. Each function is explored individually and in relation to the wider framework. The chapter concludes with a summary statement of findings.

Chapter 5. Study 2: Experience Sampling Methodology Study

Study 2 examines the functions of music from an ecologically valid perspective by performing an experience sampling methodology study with real-world listeners. The chapter presents a rationale for and methodology of the experience sampling methodology study before continuing with a larger analysis section examining the findings of the experience sampling methodology study. The analysis comprises a general explanation of the findings, new taxonomy of the functions of music identified

within the study, a discussion of the novel themes present in the data, and individual qualitative explorations of functions as observed in the study.

Chapter 6. Consensus Functions Framework

The chapter addresses one of the key aims of the study by constructing a final exhaustive taxonomy. The final taxonomy of the functions of music draws on the extant theory developed in Study 1 and the ecologically valid data gathered in Study 2. The chapter details the methodology for combining, excluding, rearranging and defining the functions contained within the final framework.

Chapter 7. Conclusions

The thesis concludes with a summary statement, a discussion of the key findings of the research including their contribution to the extant research and their limitations. The chapter covers the final taxonomic framework, the use of qualitative definitions, the role of context in music-facilitated goal-orientated listening, and a discussion of a model that adequately expresses such listening. The chapter ends with suggestions for further research, and some final thoughts.

2.1 Music & Utility

You can't always get what you want
But if you try sometimes you might find
You get what you need

- *The Rolling Stones "You Can't Always
Get What You Want" (1969)*

In 1627, Francis Bacon presented his vision of 'sound-houses', offering incredible feats of musical engineering for the listener: "we have also means to convey sounds in trunks and pipes, in strange lines and distances" (Bacon, 2000, p. 23). In 1962, Marvin Camras more accurately predicted our current methods of engagement with media in a more general sense: "a person merely requests a recording that he desires, whereupon the recording at the central office is transmitted at high speed over the telephone, and recorded on the home unit" (Camras, 1962, p. 639), foreseeing the 'ephemeralisation' of listening technologies (Fuller, 1971, p. 253). Although the specifications of Camras' proposed media delivery system were fixed in the electromagnetic technologies of the day, the concept would be made manifest within half a century of his prescient essay.

Three decades after Camras' speculative writings, Goldstein first spoke of the "celestial jukebox" (Goldstein, 2003), the first feasible realisation of the system suggested by Camras. The celestial jukebox proffered the notion that music could exist in the ether to be listened to at any moment (see Hatch, 1995). Unlike the phonograph, cassette, or CD, it would offer listeners music without any reliance on physical media, and would not require the listener to own their music (which was still the case with the iPod). Removing the need for physical musical artefacts would change the listener's relationship to the music and would have huge implications for the music industry. Music, without a physical presence, would leave the listener free to move about the world untethered from any centre of production.

The celestial jukebox is here. Ratliff posits that "we are listening in the time of the cloud" (Ratliff, 2017, p. 1). Mainly due to the explosion of mobile telephony, widespread internet

access, fast data transfer capabilities, and the “spotification”¹ of music, the notion of music appearing from an invisible source has come to fruition. With increased access to the internet and increased speeds, predictions made nearly two decades ago as to the instant availability of music through wireless digital means have come to pass (e.g. Hargreaves and North, 1999; Kamalzadeh *et al.*, 2012). The expectation placed on personal devices to offer extended connectivity across platforms, and the world’s ever-growing digital infrastructure has allowed the celestial jukebox to become an expectation rather than a far-off dream of the future. Music is now ubiquitous (Kusek and Leonhard, 2005). Indeed, Kassabian (2013, p. 9) believes for music to appear truly ubiquitous it must appear completely source-less, and music will become only more ubiquitous as more with greater connectivity. Indeed, Spotify refer to the company’s approach to provision as their “ubiquity strategy” (Spotify Press Office, 2019).

Our adoption of Camras’ and Goldstein’s prophesied celestial jukebox has been rapid (Morris and Powers, 2015, p. 106). Yet, the speed and ubiquity of our adoption of such flexible listening technology are not the only noteworthy aspects of the developments. We should also consider the underlying driver for both the development of, and the desire to adopt, the celestial jukebox in such a concerted manner. From this a vital question arises: why do we wish to listen? Particularly, why would we desire to listen beyond the confines of the concert hall? What are the underlying drivers for listening?

As our listening becomes disconnected from traditional centres of dissemination (concert halls, performance spaces, television music channels) (Steffens, Greb and Schlotz, 2018), the spaces where we engage with music can be almost anywhere (Krause, North and Hewitt, 2016, p. 3). In almost all locations, programmatic factors that may have originally limited listening are no longer restricted by the conductor or radio disc jockey. We now have infinite choice from the celestial jukebox. Without the social and architectural structures of traditional music listening we may ask if activity, location or context be the impetus for musical engagement? Freedom from the temporo-spatial components of traditional listening spaces and technologies has changed our listening (Greb, Schlotz and Steffens, 2017, p. 2), and may have gifted listening a

¹ A relatively new term originally emerging on Swedish blogs in late 2009 in relation to ThePirateBay controversy (Schwarz, 2013). The term is distinct from notions of ‘napsterisation’ of music, as it refers to streaming and non-physical curation rather than illegal P2P filesharing practices. Some descriptions of the term are particularly pessimistic (cf. Schwarz, 2013).

new symbiosis with context. Has our listening has developed to the point where we listen both within, and because of, context?

Scherer and Zentner (2001) point to the potent interplay of music, context, and personal variables where individuals utilise music to achieve specific outcomes. Further compounding the issue of listening, is the omnipresent sonic landscape in which we live, with ‘muzak’ as an increasingly pervasive force in retail establishments, restaurants and bars, television, associated media, and recreation often occurring in direct opposition to our desired listening (e.g. Greasley and Lamont, 2011). Whether we are aware or not of the potential ramifications music can have on the psychological, emotional, social, and physiological aspects of life (e.g. Saarikallio, 2011; Knobloch and Zillmann, 2002), it is a resource we employ on an everyday basis.

Furthermore, these developments engender new ways to approach music as a listener, a post-modern approach, where links and resonances between musics can be identified by listeners and exploited as such. Gone is the codified high art of the concert hall, the linearity enforced by physical media, and the unidirectional control prescribed by radio (Ratliff, 2017). Instead, listeners have become digital flaneurs, placed in a position where flexibility and variation are possible to an almost infinite degree. The basic concept of the shuffle function is an ‘experiment’ in listener behaviour (Levitin, 2007, p. 4), as it allows listeners to traverse auditory landscapes in a random manner, either finding resonances and connections between disparate musics, or “looking for the perfect beat” (Bambaataa and The Soulsonic Force, 1983) to match their surroundings and contextual considerations.

Perhaps most revealing in terms of listener behaviour would be an analysis performed by on Spotify users. Paul Lamere of Spotify stated that from the most common 100 words used to title user generated playlists 17 were specific genres, while 41 related directly to context (Lamere, 2015). Lamere even goes as far to say that, for listeners, “context is the new genre” (ibid.). These commonly occurring words from these playlists were broken down into several categories: “training and workout” including *gym, running, cardio, fitness*; “mood” including *sad, relax, chill, sleepy*; “travel” including *roadtrip, commute, drive, fly*; “romance” including *sex, love, romance, breakup*; “time” including *summer, night, evening, sleep*; “focus” including *work, study, flow, office*; and “socialising” including *party, friends, smoking, girls night*. It would be reasonable to conclude that listeners are engaging with contextual listening in

an active manner, considering it an integral part of their listening strategies (see Hagen, 2015). There is also evidence to suggest that the sequencing or order of tracks within a playlist can be important (Krause, North and Hewitt, 2014, p. 320), although the popularity of shuffling behaviours would seem at odds with this in some instances. Finally, many of the popular streaming subscription services have identified this behaviour and have attempted to offer contextualised listening strategies for listeners. As of February 2017², Deezer, Spotify, Google Play Music, Amazon Music, and Tidal all present options for contextual listening (see Appendix A).

The impact of context on listening is most apparent in these digitally curated and personalised spaces. The situational or contextual terms proffered by both listeners and streaming services that provide for listening scenarios also inspire listening. The line between context and the underlying impetus for listening is now blurred. It may also allow listeners to engage more fully with their concurrent activities. These contextual approaches to listening suggest that the concepts of both listening and situation are inextricably linked; merging together in the experience of listeners where the two are not discrete entities. Listening *is* context, or at the very least, context inspires where music is utilised. How then, should we conceptualise these contextual aspects of listening? Furthermore, how do these concepts resonate with the underlying reasons for music listening in the first instance? Finally, how can these aspects be parsed into a singular, cohesive perspective on listening?

The chapter presents the pertinent research to address the questions raised here and begins the literature review portion of this thesis. The chapter begins by positioning listening as an expression of goal-orientated behaviour and exploring the notion of utility as something that unpins all listening episodes. Following this, the chapter considers the role of context in listening episodes by examining the situation, the listener, and the musical materials in a holistic review of the context surrounding listening situations referring back to the underlying concept of goal-orientated listening. The penultimate section brings both the theory underpinning the drivers for musical engagement and the contextual considerations of listening episodes together in a model that defines the features or variables influencing and governing listening behaviours. The chapter ends with a short summary.

² Accessed 21st February 2017. Deezer (version 6.15.0), Spotify (version 7.6.0), Google Play Music (version 3.17.1007), Amazon Music (version 6.3.1), and Tidal (version 2.1.2.177).

2.2 Music-Facilitated Goal Attainment

Hargreaves and North ask “what is music for?” and “what functions does it serve in modern life?” (Hargreaves and North, 1999, p. 71). The question often goes unexplored in many of the dialogues surrounding listening in everyday life. As will be shown, there are many reasons for listening to occur, but these all speak to a broader ‘truth’ that often goes unacknowledged in favour of a compartmentalised view of listening. Sloboda, O’Neill and Ivaldi (2001, p. 11) suggest the unacknowledged, deeper driver for listening is axiomatic and can be expressed concisely, stating listeners “have goals and purposes, manifest or latent, which music engagement fulfils”. It could be proposed that we often perceive listening as a product of desire, but rather in Sloboda, O’Neill and Ivaldi’s view, such desire is merely symptomatic of a goal. This assumption posits that music listening is a goal-orientated behaviour or process (Saarikallio and Erkkila, 2007) and that music can aid us in achieving goals.

Groarke and Hogan (2016, p. 781) have termed the phenomena “music-facilitated goal attainment”: the notion being that listening can aid us in everyday life or possess some utility. Although ‘listening’ is often perceived as an active process and ‘hearing’ is perceived as a passive process, music-facilitated goal attainment does not expressly delimit the process to either state. This is due to the nature of goal-orientated listening; listening and interpretation is a product of the society and culture in which music is positioned by the listener (Blacking, 1974) rather than a ‘mode’ of listening. As such, goal-orientated listening may not necessarily require the listener to be actively focused on the musical materials owing to the cultural context in which they currently reside. This thesis does not distinguish between active and passive listening except in instances where it is deemed pertinent (see Glossary of Abbreviations, Terms & Definitions p. 331).

The concept of music-facilitated goal attainment is best defined by Thomas Schäfer: “over time, individuals learn that listening to music can help them attain specific goals in specific situations” (Schäfer, 2016). Schäfer believes that this learned behaviour can become incorporated into everyday strategies for goal attainment. Furthermore, these prior music-facilitated goal attainment experiences allow individuals to define which goals can be aided or fulfilled by music listening, and assess the possible impacts of listening when used in the process of goal acquisition. Some studies have shown that increased use of music for goal

attainment can widen the range of goals individuals can employ music to achieve, thus evidencing rehearsal and learning (e.g. see van Goethem, 2010; Greasley and Lamont, 2011).

In addition to the relationship of goals and effects, discussions of music-facilitated goal attainment also highlight that goal-orientated listening is usually directed at achieving *specific* goals (Schäfer, 2016). Numerous studies have shown listeners using music “deliberately” (Juslin *et al.*, 2008, p. 669) to achieve various differing goals. These goals may concern physiological aspects of the self, regulating or augmenting aspects of emotion, changing mental states, altering characteristics of social interactions, and many subtle variations within each category (e.g. Laiho, 2004; Karageorghis and Terry, 2009; van Goethem, 2010; Lonsdale and North, 2011; van Goethem and Sloboda, 2011). DeNora suggests our listening is a product of our qualities as “feeling, thinking, and acting beings” (DeNora, 2003, p. 173), further reinforcing the use of music-facilitated goal attainment to attend to our emotional, cognitive and physiological selves. Regardless of the specific nature of the effect the music has upon the self, there is broad agreement that goals are the key driver for music listening thereby augmenting many differing aspects of the self.

Yet, the notion of music-facilitated goal attainment and the deeper conception of music as a tool for goal attainment often goes unacknowledged in favour of compartmentalised approaches to various aspects of the self. Much research has focused on the role of music in emotional regulation (e.g. Saarikallio and Erkkila, 2007; Van den Tol and Edwards, 2014; Baltazar and Saarikallio, 2015; Groarke and Hogan, 2016), and draws heavily on the work of Bandura, Locke, Gross, and goal setting and self-regulation theory (e.g. Bandura, 1991, Locke, 1991; Gross, 1998). The research places the listener as “an active agent, using music consciously to change a mental state” (Boer *et al.*, 2018, p. 212) and allows them to “accomplish certain tasks... such as mood induction” (Levitin, 2007, p. 2). However, emotional regulation and self-regulation only accounts for a small portion of what music-facilitated goal attainment is capable of. The nature of the phenomena is broader than emotional regulation or self-regulation. Research has identified some of the physical goals that listening can aid with (e.g. Priest, Karageorghis and Sharp, 2004; Elliott, Carr and Orme, 2005; Bull, 2007; Martin, 2008), the impact of listening on mental processes and memory (e.g. Schulkind, Hennis and Rubin, 1999; Lonsdale and North, 2011; Blais-Rochette and Miranda, 2016), and music as a tool to augment social interaction (e.g. Crossen and Budzik, 2006; DeNora, 2006b; Boer, 2009). Listening goes far beyond emotional regulation, although it is a significant aspect of it.

Although music-facilitated goal attainment can certainly encompass regulatory strategies, it is not limited to them. It is capable of including self-regulation, emotional regulation, and goal setting research, and speaks to the core driver of listening as a goal-orientated process. Blacking supported this wider conception of music suggesting “music links not only to individual sensation and emotion to social experience and discourse, but also individual growth to national politics” (Sager, 2006, p. 143). Furthermore, the research into regulatory listening is often concerned with the processes involved in regulation and their perceived outcomes. This research, as was explained in the introduction, wishes to ground music-facilitated goal attainment in everyday life and contexts to examine the breadth of what can be achieved, and not the processes by which it occurs.

2.2.1 Functionality

Schäfer suggests that functionality “refers to the deliberate use of music to attain specific goals in specific situations” (Schäfer, 2016, p. 3). Rather than refer to music-facilitated goal attainment as a regulatory process, calling upon Schäfer’s definition of ‘functionality’ may be more appropriate. Regulation infers a sense of stasis or maintenance, which does not necessarily map onto the broader terms in which this thesis (in line with Schäfer, Blacking and Sloboda) elects to conceptualise the goals that listening is capable of facilitating. Instead, ‘functionality’ provides a vocabulary distinct from that of regulatory theory but is still closely aligned with the wider notion of goal attainment through listening (and the functions of music, which form the core of this thesis). As such, the deliberate use (‘functionality’) of music-facilitated goal attainment listening is capable of including regulatory goals of music but is not restricted by regulatory theory.

Schäfer believes that individuals “learn that music listening can help them attain specific goals in specific situations” (2016, p. 3). These functional behaviours appear to be learned by evaluative conditioning although, in the recent work of Patrik Juslin, there is evidence of other methodologies via which we respond to musical stimuli (see Juslin, 2013). However, the pathways by which music-facilitated goal attainment is learned is likely an irrelevance here as, even in Juslin’s own words, “listeners are quite knowledgeable about how to achieve specific effects” (Juslin *et al.*, 2011a, p. 199). What certainly is clear is that music’s growing ubiquity has altered our relationship to it, and new functionality has emerged as a consequence of that ubiquity. The result of portability and flexibility is that individuals now “choose music in

conjunction with concurrent tasks and activities to help them achieve goals” (Sloboda, Lamont and Greasley, 2012, p. 433).

Chamorro-Premuzic and Furnham (2007)	
Items	Category
Listening to music really affects my mood I am not very nostalgic when I listen to old songs I used to listen to Whenever I want to feel happy I listen to a happy song When I listen to sad songs I feel very emotional Almost every memory I have is associated with a particular song	Emotional use of music (e.g., emotional regulation)
I often enjoy analysing complex musical compositions I seldom like a song unless I admire the technique of the musicians I don't enjoy listening to pop music because it's very primitive Rather than relaxing, when I listen to music I like to concentrate on it Listening to music is an intellectual experience for me	Rational/cognitive use of music (e.g., intellectual appreciation)
I enjoy listening to music while I work Music is very distracting so whenever I study I need to have silence If I don't listen to music while I'm doing something, I often get bored I enjoy listening to music in social events I often feel very lonely if I don't listen to music	Background use of music (e.g., background, parties)

Table 1 Chamorro-Premuzic and Furnham (2007) uses of music inventory

Schäfer *et al.* suggest that there “exists a long tradition of theorising about the potential [functionality] of music” (Schäfer *et al.*, 2013, p. 3). What functionality is available to us? What is music listening capable of facilitating or aiding with? Several authors have attempted to compile exploratory or comprehensive lists of music-facilitated goals. Chamorro-Premuzic and Furnham (2007) identified 15 uses of music in everyday life sorted into three categories (Table 1), although within their proposed ‘Uses of Music Inventory’ they include at least two items that appears to directly contravene the goal at hand for the listener (an inability to access nostalgic emotions, and music causing unwanted distraction). Lonsdale and North (2011) performed a uses and gratifications analysis of the field and identified 30 possible reasons for listening to music sorted into six categories. These reasons are presented in an infinitive form and include emotional, cognitive, social, and behavioural goals. As such, Lonsdale and North have avoided the limitations present in regulatory theory by placing the locus of importance on the listener, reinforcing Juslin’s assertion that listeners are generally aware of their own goals.

Lonsdale and North (2011)	
Items	Category

To help get through difficult times To relieve anxiety To relieve tension/stress To express my feelings and emotions To make me feel better To alleviate feelings of loneliness To escape the reality of everyday life	Negative mood management (e.g., to make me feel better)
To construct a sense of identity for myself To explore possible identities To portray a particular image to others To express my identity To create an image for myself To display my membership of social groups/subcultures	Personal identity (e.g., to create an image for myself)
To learn how to do things To learn how to behave in future To obtain useful information for daily life To discover who I really am To learn how other people think	Surveillance (e.g., to learn how other people think)
To be entertained To relax To set the 'right' mood To take my mind off things	Positive mood management (e.g., to set the 'right' mood)
To keep up with current events To stay in-touch with current fashions and trends To spend time with family To have something to talk about with others To spend time with friends	Interpersonal relationships (e.g., to have something to talk about with others)
To 'fill' uncomfortable silences To pass the time To relieve boredom	Diversion (e.g., to pass the time)

Table 2 Lonsdale and North's (2011) music-facilitated goals

The 30 items identified by Lonsdale and North (Table 2), while interesting in their own right, are most notable for a quality which they lack: context. Sloboda, Lamont and Greasley believe the “surrounding contexts of music not only intrude on the act of hearing, but in many cases shape and control the very purpose, nature, and effect of that hearing” (2012, p. 437). Lonsdale and North's items lack the requisite specificity; specificity being vital to Schäfer's description of functionality. In these items, we can suggest that the specificity would be drawn from an understanding of the context in which the goals and listening were taking place. music-facilitated goal attainment does not occur at random, rather, it is inspired by the context in which listening occurs. The context or situation in which a listener currently exists drives music

selection and listening (Greasley and Lamont, 2011, p. 60) with a view to goal attainment. To extend the concept further, listening, when properly contextualised, may allow us to examine goals and may explain the listener's motivation for the listening episode. Furthermore, goals may vary between contexts and individuals (Juslin *et al.*, 2008). It is likely we can only understand the value of listening by comprehending the context in which listening occurs (North, Hargreaves and Hargreaves, 2004, p. 41).

2.3 The Contextual Triad

Whilst we can suggest that listening is a product of axiomatic goal orientation in every conceivable case, the theory presented thus far is not capable of identifying and qualifying these goals. Contextual concerns are particularly pertinent here as, firstly, contextual considerations and the listener's positioning within the context causes goals to manifest (Sloboda, Lamont and Greasley, 2012, p. 437). Secondly, the array of possible variables contained within the notion of 'context' presents as a tangled web of research findings without a unifying theory. Greb, Schlotz and Steffens (2017) propose a list of the "main variables", drawn from an analysis of other studies into the field, that may influence context and music-facilitated goal attainment:

Gender, age, personality traits, musical taste, strength of music preference, cultural differences, mental health, psychological well-being, musical training, listening location, main activity while listening to music, presence of others, level of choice, mode of presentation, momentary mood, and time of day. (Greb, Schlotz and Steffens, 2017, pp. 6-7)

How might we understand music-facilitated goal attainment listening with no understanding of the context in which goals develop? Furthermore, if such a large list of possible variables were explored in depth, it would go far beyond the scope of this research and would likely run to several volumes. As such, only those variables most 'pertinent' to goal orientation and inspiring music-facilitated goal attainment listening are explored here. Here, 'pertinent' is defined as those variables that cannot be ascribed to broader individual differences and have the possibility to vary considerably between listening episodes. This research will expressly not explore "gender, age, personality traits, musical taste, strength of music preference, cultural differences, mental health, psychological well-being, musical training" (*ibid.*). These variables can variously be ascribed to individual differences that can be somewhat unpicked from a singular contextual music listening episode. These individual differences present no or only

slow variation over time, rather than being directly tied to a listening episode. For example, cultural differences and gender are rarely mutable (if they are they occur over extended periods of time), and as such are not drawn directly from or within a listening episode. As such, this research will sidestep the problematic gyre of individual differences, and focus its examination on variables that flex with and around goal orientation.

Greb, Schlotz and Steffens believe that “music listening always takes place in a triangulation between the listener, the situation, and the music” (2017, p. 4). As they traverse their everyday lives, listeners encounter music in a range of differing situations. Any description of listening should, as a necessity, account for the variability in such situations (Krause, North and Hewitt, 2016, p. 3). Although we understand many of the physiological mechanisms involved in the perception of sound (e.g. Alberti, 2001), a listener’s interpretation of music is significantly altered by context i.e. a piece of Mozart listened to within the concert hall environment is understood and interpreted very differently than the same piece heard over an elevator’s speaker system. The situation may shift the meaning or purpose of listening, and therefore should be scrutinised.

However, other factors are also in play in such episodes (e.g. Zillmann and Gan, 1997; Rentflow and McDonald, 2011; Rentfrow, Goldberg and Levitin, 2012). Our emotional and cognitive states bring their influence to bear on listening (e.g. Scherer, 2004; Saarikallio, 2011; Baltazar and Saarikallio, 2017). The presence of others and our relationship to them, our level of control over the listening material, and where our focus is concerning the situation are all highly influential variables in our listening experience (e.g. Greasley and Lamont, 2011). Some aspects of listener personality traits correlate with musical tastes and genre listeners elect to employ (e.g. Chamorro-Premuzic and Furnham, 2007; Liljestrom, Juslin and Vastfjall, 2012). We must consider these features as part of a more comprehensive conception of listening (Greb, Schlotz and Steffens, 2017, p. 2), and not restrict listening to concerted or focused analytical listening that is so often the purview of music psychology experimentation. Accepting and incorporating aspects of situation-related variables with both person-related and music-related variables “needs to be studied to explain real-life music listening” (ibid.). Most importantly, we should also be able to identify the reasons or drivers that inspire listening by taking such a contextually-rooted position (Greasley and Lamont, 2011, p. 46).

This 3-category arrangement³ of situation, listener, and music (referred to from hereon as the ‘contextual triad’) should accurately account for and qualify the variables that influence our everyday listening.

2.3.1 Situation: Location, Activity, and Temporal

Greb, Schlotz and Steffens suggest a key question to consider in any listening episode “where this listening is taking place” (2017, p. 4). ‘Situation’ is arguably a broad category that includes location as one item rather than considering location a category in isolation. Situation is not as restrictive as may be thought initially. Juslin *et al.* (2008, p. 674) suggest that situation can be defined in terms of “physical location, the main activity that the participant (is) engaged in, and other people being present”. However, the ‘situation’ as a group of smaller items will likely govern many aspects of listening occurring within a given context.

Sloboda, Lamont and Greasley succinctly describe the relationship of music and situation, proposing that music is often selected to accompany “all sorts of activities which have no direct connection to music” (2012, pp. 437). Held within this statement are two noteworthy points: firstly, that non-musical activities are often accompanied by music regardless of the nature of the activity or goal “on the agenda” (Sloboda, 2005b, p. 204); and secondly, that the nature of the musical materials employed during activities is often independent to the activities present during listening. In the first instance, the shifts in listening technologies have allowed “people to listen to music in all kinds of circumstances” (Greb, Schlotz and Steffens, 2017, p. 2), to a degree that has never before been possible or feasible. Regarding the second point, the nature of the music we use to soundtrack our lives is idiosyncratic in nature. Our decision to select music is based on many variables, with the situation only representing one group of variables. Situationally-rooted music is now the exception rather than the rule, with only a few bastions of situational music left; often religious or ceremonial locations are the sites of such musics. The remainder of the world and activities are often layered with our own idiosyncratic choices.

However, there is no agreed definition of ‘situation’ from researchers. Typically, situational concerns are often restricted to two primary concepts: location and activity. ‘Situation’ may

³ Scherer and Zentner (2008) have suggested a 4-category conception with music split into structural and performative categories. Hargreaves and North (1997) suggested an alternative categorisation presenting arousal, behaviour, location, and social constraint in a 4-category arrangement.

encompass many different items that often go unconsidered in examinations of music listening. Indeed, some researchers only consider situational variables to be constructed from the location and the event (cf. Scherer and Zentner, 2001). This is not the case. Not only is situation composed of location and activity but also the time of day, season, weather, and many other less significant variables. A complex network of these items is in play during each listening episode, giving rise to incredible variability between situations. As such, here follows an examination of the pertinent component variables that contribute to the macro concept of ‘situation’ and parses the relevance of the items for listeners and their goal-orientated listening.

Location

Although some researchers may still consider music listening as typically related to the live manifestation within a concert hall or venue, this is not representative of the nature of music as it currently exists within the world (Krause, North and Hewitt, 2015, p. 8). Music listening happens as a matter of course in most locations and has become increasingly less remarkable since the introduction of portable cassette players such as the Sony Walkman (and its descendants, both physical and ephemeral). We are now capable of listening to a choice of music during everyday, mundane activities (e.g. commuting, travel, shopping, socialising, waiting, exercising, relaxing). With the wide-spread adoption of omnipresent listening devices: small, handheld objects with no need for additional media or storage and the ability to reproduce almost any piece of recorded music in high fidelity, the “choice to hear specific music can be exercised in more and more situations” (Sloboda, Lamont and Greasley, 2012, p. 431). Do we know where and why music is listened to? This has evident repercussions for any theoretical conception of listening (Krause, North and Hewitt, 2016, p. 3).

These questions prove somewhat difficult to explore as there is limited research concerning these locations and the frequencies within which individuals listen. Further to this, even fewer attempts have been made to interpret the relevance of the listening material to the location, and vice-versa. Like so many aspects of this research, there is no definite list of locations where listening occurs, although thankfully there is a considerable degree of consistency in locations from those few researchers who have studied location.

Items					Category
Greb, Schlotz and Steffens (2017)	Juslin <i>et al.</i> (2008)	Krause, North and Hewitt (2016)	Greasley and Lamont (2011)	North and Hargreaves (2004)	

Home	Home	Home	Home	Home	Home
Workplace	Work/School	Work	Workplace		Work
		In Class			
Transportation	Vehicle	Driving	Transportation	Driving	Transitory Space
Vehicle		Public Transportation		Bus/Train	
		Passenger in Car			
		Walking			
Sports Facility	Gym	At Gym	Gym	Gym/Exercising	Gym
Music Event	Pub/Disco	Pub/Club	Entertainment/Bar	Pub/nightclub	Musicking
Location	Concert/Theatre	Concert		Concert	
Public Space	Outdoors				Natural Environment
	Shop	Shopping	Shops	Shop or Mall	Urban Environment
	Restaurant	Restaurant		Restaurant	Restaurant
	Café				
	Church	Church		Place of Worship	Church
Other	Other Location	Other		Other	Other
				Waiting room	
	Others Home	Friend's House	Someone else's house	Friend's house	Friend's home

Table 3 Comparative appraisal and qualitative categorisation of publications identifying locations

Table 3 summarises the extant research into listening locations. The table presents a topical survey of the datasets (as described in Haussler, 2008), and presents “quantitatively-informed inventories of data” (ibid. p.144). This methodology ensures that “the [topics] identified are strongly linked to the data themselves” (Patton, 1990. cited in Braun and Clarke, 2006, p. 89). Therefore, the categories identified through the comparison directly mirror the language used within the source publications, although the categorisation process necessitates and reduction in granularity resulting in a broader set of possible locations. However, the data showed striking parity across the various investigations into location. Indeed, the table highlights the lack of variability across proposed locations. For some individuals only home, workplace, and travel locations might be encountered on some days. Clearly, other individuals will have a more varied distribution between these possible everyday locations. The table includes an identifies 11 categories from 54 items. It would appear possible to allocate everyday behaviours relatively accurately to these locations. Yet, the location of listening reveals very little about the ‘whys’ of

listening or the driver underpinning goal-orientated listening, and only reveals limited information concerning the broader context. When observed critically, the location does not reveal the driver for many musical engagements.

Activity

One of the issues that become immediately apparent when exploring ‘situation’ is the lack of distinction between location and activity. Some researchers present compelling findings but fail to differentiate between these two aspects of situation. A prime example of this blurring can be observed in North, Hargreaves and Hargreaves’ (2004, p. 67) publication⁴. Within their examination of “place”, they differentiate location by activity, i.e. home is divided into five different categories: housework, intellectual tasks, music listening, eating, other. While this certainly offers a more nuanced approach than merely relying upon location, it blurs the meaning of both location and activity. By the exclusion of other items, it even goes as far as to suggest that intellectual tasks do not occur in any other locations listed, which reason dictates cannot be the case. Furthermore, it lacks other obvious locations such as the workplace.

However, one aspect of this blurring should be applauded. One item is labelled as “gym/exercise”, blurring the line between location and activity. Here it is possible to observe particular location-based activities. Rarely does one attend the gym to perform chores or housework. Rather, this location has a specific set of activities associated with it. It is likely that some locations give rise to specific activities more than others. Although, as previously suggested, the location may not shed light on the driver for musical engagement, it may offer clues as to the possible activities occurring within that location, and therefore the driver for musical engagement may become clearer.

⁴ As such this publication is not included in the location or activity discussions here as it cannot be adequately parsed into either category.

Items					Category
Sloboda (2005)	Juslin <i>et al.</i> (2008)	Juslin <i>et al.</i> (2011a)	Greb, Schlotz and Steffens (2017)	Lamont and Webb (2010)	
Housework	Housework	Housework	Housework	Housework	Chores
While driving, running, cycling	Travel	Travel	Being on the move	Driving	Travel
While on public transport				Public transport	
To work to (deskwork)	Work/study	Work/Study	Working and studying	Working	Working
Having a meal	Having a meal	Having a meal			Eating
Background while socialising	Social interaction	Social interaction	Social activity	Socialising	Socialising
To accompany sexual/romantic events					
	Music listening	Music Listening	Pure music listening	Listening	Musicking
	Concert attendance	Concert attendance		Live music	
		Performing music	Making music	event	
	Shopping			Shopping	Recreation
	Partying	Partying	Partying		
	Gaming	Computer hobby		Computing	
Whilst reading					
	Relaxation	Relaxation	Relaxing	Resting/bed	Relaxing
In bed, to sleep to			Falling asleep		Sleeping
	TV/movie watching	TV Movie		Watching TV	Other Media
	Physical activity	Physical activity	Exercise	Exercise	Exercise
			Coping with emotions		Personal Maintenance
Wake up to					
Having a bath				Getting ready to go out	
	Other activity	Other activity	Other		Unknown
Sing along to		Ceremony		Thinking	
Arrival home from work				Meetings	

Table 4 Comparative appraisal and qualitative categorisation of publications identifying activities

This relationship further suggests that activity may be the key concern when attempting to discern the driver underpinning music listening behaviours. Greb, Schlotz and Steffens (2017, p. 4) suggest that it is an additional category that brings with it essential characteristics

concerning music listening. However, there is significant evidence to suggest that activity is the most critical aspect of the engagement. This evidence can be summarised concisely: the goal of an activity is the primary variable influencing music listening (Juslin *et al.*, 2008; van Goethem, 2010; Saarikallio, 2011). As such, “listeners use music deliberately to achieve various goals” (Juslin *et al.*, 2008, p. 669). Moreover, the goals the listener is attempting to achieve are situationally dependent (*ibid.*). We may consider the location a consequence of an activity, and the goal occurring within the location associated with that activity. Motives for listening to music can also influence our experience as “how we respond to the music depends partly on why we listen to it” (Juslin *et al.*, 2011a, p. 170). This is true for locations where passive activities may occur (e.g. relaxing in a park) or for locations where high levels of physical or mental effort are required in the activity (e.g. running on a treadmill in a gym).

As with location, few researchers have codified their approach to activity. Although activity is the focus of detailed discussion in numerous publications concerning contextualised music listening, there are few exhaustive structured approaches to the subject. As with location, there exists no agreed upon arrangement of activities that can occur concurrently with music listening, although again there is a high level of consistency across those few researchers that have explored the subject (see Table 4). The consistency with which researchers have expressed activity presents a useful insight into the connection between activity and location. The table presents another topical survey of the studies containing reference to activities, identifying 13 categories from 69 items (using the same methodology as the previous location survey). Many activities appear to have a counterpart location (as with housework and the home), although some activities could be distributed over a wide range of possible locations (as may be the case with social activities). As such, at this stage in the discussion, it is sufficient to affirm that the activity inspires listening, listener goals emerge from that activity, and that the location may produce that activity or even constrain it in some manner.

Temporal

The two previous variables within the situational set of variables delineate location and activity. These two variables are explored in the majority of discussions of everyday listening, especially in those where contextual considerations are included. Typically, the discussion often surrounds examples (either theoretical or from qualitative study data) rather than an exhaustive list. Few researchers even consider the influence of temporal variables (Greb, Schlotz and Steffens, 2017). These include the time of day, the season, and the weather. Amanda Krause

has published several insightful and exploratory pieces of research into these areas, but with such a limited body of research from which to draw upon, the findings are limited in their scope and application. Yet, it would be remiss not to consider these temporal concerns as part of the broader situational variables.

Concerning the time of day, several publications have explored its impact of music listening and reasons for that listening behaviour. However, throughout these papers, it is possible to see the fingerprints of activity (possibly as a consequence of circadian rhythms). North, Hargreaves and Hargreaves (2004) identified the typical working hours (between 8am and 5pm) as helping listeners “pass the time”. It is apparent that these hours strongly relate to average working patterns suggesting the listeners in the study were at their places of employment. As such, here it is likely that the time of day is an irrelevance, being entirely overridden by activity. A similar finding can be identified in Krause, North and Hewitt (2014); the incidence of listening locations shifts from private to public to private as the participants went about their day (starting at home, moving to the workplace, and then back to home). Again, here the time of day is not the notable feature, rather the concurrent activity. Although it may be tempting to suggest certain forms of music would be preferred at certain times of day, this itself may indeed be a product of activity (e.g. listening to relaxing music in the evening before bed). However, it should be noted that Schäfer (2016) has questioned if the time of day can influence music preference as part of a broader discussion (there was no conclusion presented to this provocation).

Concerning the weather, it would appear is some evidence to suggest that the weather conditions and seasonal conditions can influence music preference. Krause and North (2017a) have identified a general preference for more arousing musical materials in summer in a study that explored and compared the seasonal listening habits of Australian and UK residents.

Warmer seasons were associated with a preference for arousing music whereas cooler seasons were associated with preference for melancholy music, and spring was associated with a preference for serene music. (Krause and North, 2017a, p. 5)

Further to this, Spotify Insights published analyses suggesting that “sunnier days bring higher-energy, happier-sounding music” and that the inverse is true for rainy days (Van Buskirk, 2017). Moreover, 'rainy days' tended to have more acoustic, less electronic music played.

However, again the weather-based findings need to be considered with respect to activity. It is feasible that some weather conditions may inspire certain activities, e.g. sunny weather inspiring social barbeque gatherings. That is not to suggest that all activity is purely weather-dependent but may explain some of the findings presented in both Krause & North and Spotify's findings.

Unlike activity, temporal concerns should be perhaps considered augmenting or mediating variables within the wider situational set of variables, and indeed, display less direct effect than activity. It would be remiss to suggest that temporal aspects do not influence contextual listening at all, but their influence is limited and often goes unobserved in most research (and possibly in most listening episodes by the listeners themselves).

2.3.2 Listener: Emotion, Control & Awareness

Greb, Schlotz and Steffens believe that people “differ in the ways in which they engage with music” (2017, p. 4). This simple phrase encapsulates the issues that pervade music psychology research, but particularly the variables of the contextual triad that pertain to the listener. Many different variables influence, augment, predict, restrict or otherwise shift the actions and responses of the listener, many of which have been internalised over their lifetime (see Scherer and Zentner, 2001). The issue of individual differences is most apparent when examining the listener variables proposed by Greb, Schlotz and Steffens. The lack of mutability of many variables suggested, and the inability of researchers to directly link these individual differences to broader contextual concerns seriously limits the applicability of some of the research into listener-centric variables.

A significant amount of exploration has been performed into the relationship between one's personality and the music one elects to listen to. These investigations have been performed from several perspectives, but typically they examine the correlation between the ‘Big Five’ personality traits (see McCrae and Costa, 2011) or even Jungian ‘Psychological Types’ (see Pearson and Dollinger, 2004) and specific musical styles (e.g. Neuman *et al.*, 2015). The work of Rentfrow and Gosling (2003) has investigated further variables that influence preference for certain genres and found further correlations beyond the Big Five, including self-esteem, depression, political views, wealth, athleticism, verbal characteristics, and intelligence. Whilst this is diverting, whether personality traits can influence goal attainment through listening is the more valid question here. Some research has gone further in its attempt to connect personality traits and listening. Chamorro-Premuzic and Furnham (2007) found a significant relationship

between the kinds of listening goals one might pursue and aspects of one's personality. The study found a significant correlation between neuroticism and emotion-based listening goals, plus a negative correlation between extraversion and emotion based listening goals.

Furthermore, the study found that cognitive-based listening correlated with openness to experience, and a negative correlation with conscientiousness and emotion-based goals.

However, even with such correlations, it is not possible to understand the goals listeners engage with. Chamorro-Premuzic and Furnham do not question the larger context in which listening takes place, stating they "cannot be sure of whether the different uses of music we assessed referred to stable (trait) or sporadic (situational) differences between individuals" (Chamorro-Premuzic and Furnham, 2007, p. 183). It is highly likely that most goal orientation occurs as a consequence of the current situation, and as such, personality traits may not offer much insight into how individuals orientate themselves to a goal. There may be some aspects of personality that influence aspects of the situation, but how could this possibly be disentangled? As such, personality traits reveal very little of how one might listen for goal acquisition purposes.

A similar argument can be presented for the notion of taste. Investigations have examined the relationship between personality traits and musical taste (e.g. Neuman *et al.*, 2015). Other researchers have found differences between genders in their genre preferences (e.g. Shepherd and Sigg, 2015). Further to this, some researchers have found taste is a useful social tool for in-group and out-group identity and differentiation (Tarrant, North and Hargreaves, 2001, p. 575). However, it would be fair to propose that the 'problem of taste' (Fenster, 1991) has never been unpicked to a satisfactory degree. A considerable amount of theorists subscribe to Bourdieu's view that taste is social phenomenon (see Bourdieu, 1984). In addition, there is empirical research to suggest that taste exhibits plasticity at certain points in one's life (Holbrook and Schindler, 1989, pp. 121-124), and is likely closely associated with identity construction, maintenance and expression (DeNora, 2000, pp. 62-66).

Although taste is an important aspect of listening, it does not present a useful lens from which to examine the goals one might pursue in general terms. Taste is strongly related to situational concerns (Hennion, 2007) and flexes in accordance with the stimuli available within the situation. "Taste effectively depends on everything" that surrounds it (Hennion, 2007, p. 111). Given the reflexivity of taste, and the interwoven structure of identity, social interactions, and other variables that influence and solidify one's taste, the confounding nature of taste is readily

apparent. Whilst it is almost never the key driver for musical engagement or the target of goal-orientated listening, it *may* define or sway the material the listener engages with.

The issues surrounding personality and taste stand as exemplars for the issues that surround those variables that were defined as not ‘pertinent’⁵ to the research into contextual music-facilitated goal attainment listening. The lack of understanding and evidence to support innate or episodic mutability across the variables suggested by Greb, Schlotz and Steffens (gender, age, personality traits, musical taste, strength of music preference, cultural differences, mental health, psychological well-being, musical training) adds additional complexity to any investigation of these variables. Furthermore, how might researchers even begin to discern which of these variables, in what state of flux or stasis, corresponds to which contextualised goal orientation? As such, the variables that fall within the purview of individual differences have been excluded from this analysis.

This portion of the contextual triad review will focus on three key concepts. The first portion of this review connects the concept of goal orientation with music listening for emotional purpose, to reveal ‘emotional congruity’ in listening episodes as there is evidence of listeners ‘matching’ their listening to emotional goals (North and Hargreaves, 1996). The second portion of this section examines ideas of control in listening episodes and the influence of the presence of others. Finally, the latter portion of this section concerns learning and behavioural approaches to music-facilitated goal attainment. Although the list of possible variables contained within the contextual triad suggested by Greb, Schlotz and Steffens (2017) appears exhaustive, a key component was excluded from the list: the awareness and experiences of the listener. This is explored in the final portion of the following review.

Emotion

Music is a readily accessible tool for many people to engage in emotional music-facilitated goal attainment practices. Given listeners use music for personal needs, music is a device or tool for satisfying their needs (Laiho, 2004, p. 48). It is a device that can be effectively incorporated into many areas of everyday life (Zoteyva, Forbes and Rickard, 2015, p. 316) given the ubiquitous position music holds as a source of entertainment. Many studies have explored the possible

⁵ ‘Pertinent’ is defined as those variables that cannot be ascribed to broader individual differences and have the possibility to vary considerably between listening episodes.

uses, gratifications, benefits and even risks of self-regulatory listening behaviours (e.g. Elvers, 2016; Saarikallio, 2011; Van den Tol, 2012; Schäfer *et al.*, 2013; Van den Tol, and Edwards, 2013; van Goethem, 2010; Greasley and Lamont, 2011; Randall, Rickard and Vella-Brodrick, 2014). The numerous possible impacts in everyday life that music may allow listeners could certainly provide some explanation for its omnipresence in everyday life.

Van Goethem believes that human beings “beings are capable of controlling their own emotions and mood to a large extent” (2010, p. 2). This regulation is often “one of the most important reasons for musical engagement at all ages” (Saarikallio, 2011, p. 307). There is a substantial and growing body of research concerning music listening as a tool for self-regulation, with studies identifying music listening as a common and effective method of regulation (Saarikallio, 2011, p. 308). However, despite the recent rise in interest in the field of music and emotion, few studies particularly explore emotional regulation with direct reference to the wider notion of goal attainment (van Goethem and Sloboda, 2011, p. 209). Instead, studies have focused on the interrelation between momentary arousal levels and preference as originally proposed by Berlyne (1971) with a view to selecting music to match current mood or arousal states (Thoma *et al.*, 2012). Berlyne’s theory suggests that listeners “collate the different properties of a given musical stimulus, such as its complexity, familiarity, or orderliness” to “produce predictable effects” (Hargreaves, MacDonald and Miell, 2005, p. 8). However, whilst the theory carries both significant weight and supporting evidence in many studies, it lacks a directive or imperative component. Yet, goal attainment is often the most valued aspect of music for listeners (Schäfer *et al.*, 2013, p. 7). Baltazar and Saarikallio point to numerous studies that suggest this attitude is “somewhat universal” across different groups and populations (Baltazar and Saarikallio, 2016, p. 1508). Further to this, Van Goethem and Sloboda (2011) found over 50 percent of listening episodes they studied saw participants consciously using music to alter their affective states, and that nearly half of additional listening episodes resulted in some affect or emotional modulation.

There are many reasons why individuals may elect to alter their emotional state. Bishop, Karageorghis and Loizou (2007) found three overall themes covering the majority of self-regulatory listening: psyching up, relaxing, and altering or maintaining affective states. Music is “capable of inducing sad or happy emotional responses within listeners” (White and Rickard, 2015, p. 12), and this is a factor often ignored within the literature on emotional regulation. Recently research has explored the possible implications of listening to ‘sad’ music and found

the listening experiences key to attaining catharsis and introspection/reflection for individuals (see Van den Tol and Edwards, 2014; Weth, Raab and Carbon, 2015). This may explain why individuals engage with negatively valenced music or wish to regulate towards a more negatively valenced state (given that short-term negative states may have long-term benefits or allow goal acquisition). Whilst negative emotion may initially appear antithetical to goal attainment, it may actually aid in personal goals concerning emotional events.

Music is capable of inducing⁶ both ‘basic’ (see Ekman and Friesen, 1975; Frijda, 1986) and ‘complex’ emotions (see Russell, 1980; Plutchik, 2001), and therefore the full range of valence and arousal states (Juslin and Västfjäll, 2008, p. 561). There are reasons that listeners will seek both positively and negatively valenced states, and high and low arousal states, but also there must be pathways by which individuals can access these states. In a large scale meta-analysis of over 100 studies, Gabrielsson and Lindstrom (2011, pp. 384–387) identified multiple different musical features (e.g. tempo, key, melodic structures etc.) and the linked emotional expression. It is possible to infer that, not only can music evoke emotions, but there are specific emotions associated with specific musical structures and elements. These examples range in valence and arousal levels to cover most emotional positions. However, Gabrielsson and Lindstrom approach this meta-analysis from the perspective of the composer and not the listener, leaving little evidence as to how knowledgeable listeners may be about the potential implications of their listening. It is also extremely likely that some associations between musical features and emotions are culturally specific.

Control

How much control does the listener have over their listening? Are they able to opt in or out of listening? Is the choice of listening material their own? And, is the choice of material limited? Clearly, there is a physical connection between the situation and the listener in action here: that of the listening mechanism or device. The listening device features prominently in this aspect of the discussion and is considered to be, in most instances, a portable listening device. The increasing reflexivity of music listening devices “means that the choice to hear specific music can be exercised in more and more situations” (Sloboda, Lamont and Greasley, 2012, p. 431).

⁶ Although the cognitivist/emotivist debate has a long and intricate history, it is sufficient to simply state that this thesis places itself firmly within the emotivist position i.e. that music can and does induce emotion. (see Scherer and Zentner, 2001; Thompson, 2009)

Indeed, choice is now strongly tied to the capacity and connectivity of the listening device rather than simply whether music exists within the location or activity (as is the case in the research that still positions live music as the ‘norm’).

A music lover’s collection of recordings “affords the listener freedom in selecting exactly *the right stuff*” (Knobloch and Zillmann, 2002, p. 352). Several researchers have suggested listeners having an instinctive understanding of what musical materials are required or needed at a particular juncture (i.e. Berlyne, 1971; Bull, 2007b; van Goethem, 2010). This control or freedom of choice is highly valued (Knobloch and Zillmann, 2002, p. 352) and an essential part of self-regulatory listening’s action and efficacy. DeNora (2000, p. 136) believes this control of one’s “aesthetic environment is crucial to individuals” as it grants individuals a host of possibilities in intimate, stressful, demanding or painful situations. Evidence shows the level of control an individual has over the choice of listening material is associated with mood change of some form (Sloboda, O’Neill and Ivaldi, 2001, p. 21). These changes are indicative of the personal or idiosyncratic nature of goals for the individuals, and goals are “guaranteed only by personally pursuing them in self-selected ways” (Saarikallio and Erkkila, 2007, p. 93). This self-selection imperative is essential for successful goal-orientated listening.

In goal-orientated situations listeners actively seek out appropriate musical materials (Van den Tol, 2012, pp. 19–20) and this active participation in music selection has been shown to have to distinct facets. Firstly, evidence suggests that “people’s own music under their control was related to positive affective experiences” (Krause, North and Hewitt, 2014, p. 315). Labbé *et al.*’s (2007, p. 167) study identified self-selected music as more effective for coping with stress, rather than music selected by the experimenter. The self-selected music correlated with increased affective or regulatory responses in the listener, most likely to fulfil the specific goals and needs of the individual; individuals know what they *need*. The second key aspect of the research concerns the alternate position – non-self-selected music – and shows the inverse correlative relationship. Krause, North and Hewitt (2014) reported that listeners in non-self-selecting listening conditions were less actively engaged by musical features. In Krause *et al.*’s (2014, p. 315) study, listeners rated non-self-selected music “as distracting, hindering concentration, not enjoyed, and to be avoided”. A further study by Krause, North and Hewitt (2016, p. 23) found a significant correlation between one’s ability to control one’s listening and the enjoyment of the listening (although enjoyment is not necessarily related to successful music-facilitated goal attainment).

It is reasonable to assume from the (albeit limited) research exploring the importance of self-selected music efficacy for self-regulation, that control on the part of the listener is critical for successful music-facilitated goal attainment. This is, at least in part, due to the mismatch of non-self-selected music and personally identified goals. However, a clear caveat will likely concern musicking locales i.e. performance spaces (although this is not expressly discussed in the extant research). There are certain prototypical situations or episodes (Konecni, 1982, p. 499) where the listener has little control yet may find their goals fulfilled, particularly if those goals concern musical engagement directly, or as part of a codified social occasion (Scherer and Zentner, 2001). A traditional concert programme or DJ set typically lacks any level of control on the part of the listener, and, especially in the first instance, brings with them a level of social risk were they to leave the performance midway. However, these non-self-selected listening episodes are likely mediated by other features of the experience such as novelty, cultural capital acquisition, social interaction, or dancing. Interestingly, Krause, North and Hewitt (2016, p. 25) found that selection was significantly related to what they refer to as “purposive” listening i.e. goal-orientated listening. Yet, the lack of research into the enjoyment and/or goal attainment possibilities of non-self-selected listening material is likely symptomatic of the traditional view of live listening as the *de facto* listening experience.

Further to this are considerations of the social structures within which listening occurs. Concepts of norms, peer pressure, modes of behaviour and situationally sanctioned responses (see Konecni, 1982) are often entirely absent from the discussion of music listening and selection; a “vacuum” according to Konecni (*ibid.*, p. 498). The most readily apparent enforcers of such structures are other people occupying the same situation. Few studies have explored the impact of others on listening, although Greasley and Lamont’s (2011, p. 56) experience sampling methodology study highlighted several key findings concerning the role of others in listening episodes, as the authors state “the presence/absence of others plays a fundamental role in determining people’s responses to music”. Key to their discussion is the notion of ‘negotiation’ between the parties. Without such negotiation of control, one may be at the whim of others (giving rise to the negative effects of low control as found in Krause, North and Hewitt’s 2016 study) or must subject other individuals to music they may dislike. They report incidents of participants leaving social occasions owing to disliked music, individuals “suffering” the choices of others (*ibid.*, p. 55), participants bonding over shared tastes, and the barriers music can create if applied inappropriately in social situations. The language used by

participants in Greasley and Lamont's study is highly emotional and highlights the importance of the role of others in listening episodes, as personal relationships are at stake. The presence of others in listening situations has been shown to have a range of effects on music listening (Greb, Schlotz and Steffens, 2017). Other research has highlighted collaborative music selection efforts and found listeners distinctly more positive about the experience (see Cunningham and Nichols, 2009). What is certain is that music selection with or near others is an activity fraught with risk.

The proliferation of portable music listening devices may well have altered listener behaviour (Juslin *et al.*, 2008, p. 678) as listeners now expect infinite choice and control, although this may be somewhat at odds with our surroundings at times. Some researchers point out that the distinction of control in public and private spaces is far from a binary one (e.g. Bull, 2007b; Krause, North and Hewitt, 2016). However, Krause, North and Hewitt (2016, p. 4) do point to fact that public spaces often present zero control. The reflexivity with which portable music devices can respond to listener control and selection (influenced by contextual goals) makes music a powerful tool (*ibid.*) and further refines the possibilities for self-selected music within the situation. Randall and Rickard (2017, p. 4) infer portable music listening is ideal for observation in these matters as it allows for the greatest and most personal control on the part of a listener, potentially generating the most effective self-regulatory responses to possible contextual goals. However, whilst several studies have explored the connections between goals, situations and musical materials, few studies have linked goals or situations directly to devices and control.

Rehearsal & Awareness

Researchers suggest that music listening is a 'device' or 'technology' widely employed by people consciously to influence their affect (see van Goethem and Sloboda, 2011, DeNora, 1999), although whether goals orientation and emotional self-regulation are conscious processes is still open to debate. One explanation for this is the relative ubiquity and inexpensive nature of music, and the "consistent successful outcomes" that come from music use (van Goethem, 2010, p. 298). Often researchers report an implicit understanding on the part of the listener or participant in studies; they know what they *need* in a given situation (Bull, 2005). Such knowledge of the requirements placed on an individual by situational concerns is often inferred as implicit understanding. Berlyne, and many others including van Goethem, posit this knowledge of 'what will work' or 'what I need' is based on previous experience and learning.

As such listeners find themselves with “familiar ready-made solutions” (Berlyne, 1971) that have been implemented previously and shown to obtain the desired result. Hence, we can infer that music-facilitated goal attainment is in part a product of previous experience and learned behaviours. This poses an interesting question: is it possible to learn and rehearse music-facilitated goal attainment for more effective listening? Furthermore, is music listening for regulatory purposes a conscious process? Embedded within these questions is also the issue of listener engagement, and whether the level of engagement a listener has with music can alter the efficacy of self-regulated listening. Two studies, Greasley and Lamont’s exploration of listener behaviour (2006) and Van Goethem’s GSTM study (2010), offer some insight into these potential effects.

Greasley and Lamont’s study found more engaged participants – those that listen to music more regularly – were consciously aware of how music was able to change their mood (Greasley and Lamont, 2006, p. 964), highlighting a possible relationship between engagement and conscious employment of music-facilitated goal attainment. Further to this, they found that more highly engaged listeners were more able to verbalise and discuss their uses of music than those rated as less engaged. This was partly due to vocabulary; less engaged participants lacked appropriate language to properly articulate their understanding or use of music. However, Greasley and Lamont are quick to point out the practice of these individuals regarding music use does not differ as they both use music to alter their affect. Greasley and Lamont found that interviews allowed individuals, both more and less engaged, to consciously reflect on their use of music. While conscious awareness before or during regulatory listening was confined to more engaged participants, the resulting affective changes were reported by all participants.

Van Goethem’s study found most listeners reported knowing when to play music (van Goethem, 2010, p. 148) and what music was needed for certain situations or goals. They were conscious of playing music as a means to achieve specific affective change, and reported habitual situations where music was most commonly employed. Participants consider music a “quick and easy fix” (ibid., p. 149). In some instances, music choice was not specific, and simply having music of some form was acceptable, as was a random selection from a limited range of musical materials. In other situations, participants reported using their favourite music to regulate to an improved mood state. Given that these are somewhat habitual and that participants used music to achieve an “almost guaranteed outcome” (ibid., p. 297) there may be some element of rehearsal in these particularly instances. However, to go beyond this would be

conjecture as no studies offer experimental designs to test possible behavioural confirmation or placebo effects.

Post-study discussions occurred in both studies. Greasley and Lamont reported less engaged individuals expressing “surprise at the functions that music serves for them in everyday life” (Greasley and Lamont, 2006, p. 965). Van Goethem’s study showed similar responses. Van Goethem’s study also showed that when participants were forced to consider their regulatory music use it allowed them to “gain insight, and in some cases helped them to change their behaviour” (2010, p. 166). In the same study, individuals also became more aware of affect regulation in general terms and were able to proffer solutions to achieve regulatory effects when music was deemed to not work. Perhaps the most salient finding in Van Goethem’s study is that regulatory listening was learned through conscious consideration. Listening for regulatory purposes increased over the course of the study, and continued when unmonitored, signifying possible behavioural change and the development of more attuned regulatory listening skills. Van Goethem suggests that if “the music continues to have the same effect, it becomes more strongly embedded in the listener’s affect regulation behaviour” (2010, p. 157). This learning also resonates with the work of Juslin (2013) who suggests that evaluative conditioning as one of the key variables that gives rise to reactions to musical stimuli, furthering the support for learning and rehearsal of goal-orientated listening. Finally, in a related study, Saarikallio found that greater conscious emotional self-regulation through music has impacts on other areas of life (Saarikallio, 2011). The awareness generated through regulatory listening may offer additional benefits to affect regulation in other areas of life and allow for a greater selection of strategies and tactics to be employed by the listener. It appears that regulatory listening as a learned behaviour can apply to other areas of emotional wellbeing and awareness.

Awareness appears to be a key variable in successful music-facilitated goal attainment. In both Van Goethem’s and Greasley and Lamont’s studies participants with limited awareness pre-study showed an increase in awareness as a consequence of participation. Further to this, and of utmost importance, is the increased effectiveness inferred in more aware selection and listening processes (Greasley and Lamont, 2011, p. 62; van Goethem, 2010, p. 300). In summary: goals might be more easily attained through a greater awareness of goals, music selection and listening. Thus, we may infer that some degree of conscious awareness of goals improves music-facilitated goal attainment processes, and that such awareness and techniques

may be learned through rehearsal. Finally, one may go as far as to say that awareness is the most important element of music-facilitated goal attainment listening.

2.3.3 Music: The Idiosyncratic Feature

The list offered by Greb, Schlotz and Steffens (2017) provides a general grounding to the variables that make up the contextual triad. However, their list lacks explicit music-centric variables, and focuses on either situational considerations or listener-centric, individualistic variables. Alternative models of the triad (e.g. Hargreaves, MacDonald and Miell, 2005) expand the musical variables into non-exhaustive lists including: genres, idioms, styles, pieces, complexity, familiarity, orderliness, prototypicality (see Martindale and Moore, 1988), and performance context. Although this may initially appear to be an oversight on the part of Greb, Schlotz and Steffens, it actually highlights a key aspect of the triad that is typically not considered: music is irrelevant.

Although this statement may initially appear controversial, the truth is far more nuanced: that is to say the *specific* musical features are irrelevant as the focus of study when exploring goal-orientated listening in context, and are only meaningful to the individual. It is arguable that music is a consequence of the other two sets of variables of the contextual triad (situation and listener). Music in isolation, without contextual considerations, an activity, a listener, and a wider social construct, is meaningless and without value (value itself deriving from social constructs, see Bourdieu 1984). Even at the most abstract level music cannot exist without human interpretation i.e. Blacking's "humanly organised sound" (Blacking, 1974, p. 26). Furthermore, without such contextual considerations, listening performs no function (even enjoyment or entertainment occurs within a context whereby the listener desires such functionality). The axiomatic notion of listening as a goal directed action (Sloboda, O'Neill and Ivaldi, 2001, p. 11) even places music as the resource or tool rather than the driving force for listening episodes. As such, music is likely best conceptualised (in this discourse) as part of the processes involved in music-facilitated goal attainment listening rather than a set of variables that can be studied and compartmentalised.

What is clear from this investigation is that listeners desire ultimate control over their listening, such listening is grounded in context, and the provision of listening is somewhat technologically augmented. As such, only one consideration concerning music may actually intersect with the contextual triad: availability. The availability of music for an individual to select is imperative

for music-facilitated goal attainment and resonates with considerations of control. Furthermore, the available music must *fit* with what the listener determines they *need* (Thoma *et al.*, 2012, p. 557). “No music (is) better than the ‘wrong’ music” (Bull, 2005, p. 344). Given that listeners are typically aware of their needs on a momentary basis, and select accordingly, the issue of availability is closely connected with goal-orientated listening. However, as Bull’s study revealed, participants not only understood their needs, but also were not willing to engage with music that may have a detrimental effect on their goal attainment.

Music listening is an idiosyncratic process (Bishop, Karageorghis and Loizou, 2007; Bergh and DeNora, 2009; Greasley and Lamont, 2011; Juslin, *et al.*, 2016). Listeners respond differently, with differences being difficult to track and qualify against larger themes, trends, and correlations (such as Gabrielsson and Lindstrom, 2011). Given this, and this thesis’ focus on goal-orientated listening, the research presented here will approach the music-facilitated goal attainment in an alternative manner. This thesis shall take a novel approach by placing the locus of music selection processes as beyond the scope of this work. This is not to suggest that music-facilitated goal attainment is *always* a process of overt, aware music selection, but that the music that is selected is not the focus here. Rather, the focus is on the possible outcomes that music-facilitated goal attainment, and perhaps even listening in its broadest possible terms, can render. It will consider music as a part of the contextual triad but not interrogate music directly, particularly from any musical analysis or music theory perspective. Rather, the act of listening and the goals attained through listening is where this research shall place its focus. In the study of music-facilitated goal attainment, the musical materials are a dependent rather than independent or causal variable.

2.4 Reciprocal Feedback Model

Although some researchers have explored aspects of the contextual triad (some in isolation, some in a more integrated manner), attempts to construct an approach to listening that both incorporates the triad *and* positions the axiomatic core of music-facilitated goal attainment listening as a key component are lacking in the discourse. That is, codified or explanatory models that combine both aspects are incredibly rare. Several researchers exploring aspects of listening have drawn upon Mehrabian and Russell’s PAD model (see Mehrabian and Russell, 1974) to articulate the processes involved in music-facilitated goal attainment listening, as it suggests the listener’s response is predicated on or caused by the external influencers acting upon the individual (e.g. Krause and North, 2014). However, the PAD model lacks any

specificity concerning those external influences (such as situational variables). Other researchers have called upon van Goethem's GSTM model (see van Goethem, 2010) to explain the various levels of response within the listener that result in affect regulation. Yet, only one model, the 'Reciprocal Feedback Model of Musical Communication' originally proposed by Hargreaves, North and Tarrant (2005) and expanded in Hargreaves, MacDonald and Miell (2005), incorporates these concepts to a somewhat satisfactory degree. Based in part on Berlyne's 1971 theory of appraisal of aesthetic components, the proposed model is designed to address aspects of the contextual triad and the listener response in live musical performance settings, rather than all listening episodes.

The original model attempts to qualify and dictate the transmission of 'meaning' from player to the listener during live performance. Although the model was originally designed for live music performance contexts, later iterations included non-live listening scenarios (Hargreaves, 2012). Surprisingly, given its original intended purpose as describing the interaction between player and listener, the model presents the best and most transparent contemporary view of the processes involved in goal-orientated listening. As such, it is the best current model we can employ as a lens to explore listening, as it accounts for both contextual considerations and goal orientation without relying on purely regulatory theory. It is also the only theory that accounts for these factors, leaving no other options for grounding the following explorations and research in this thesis.

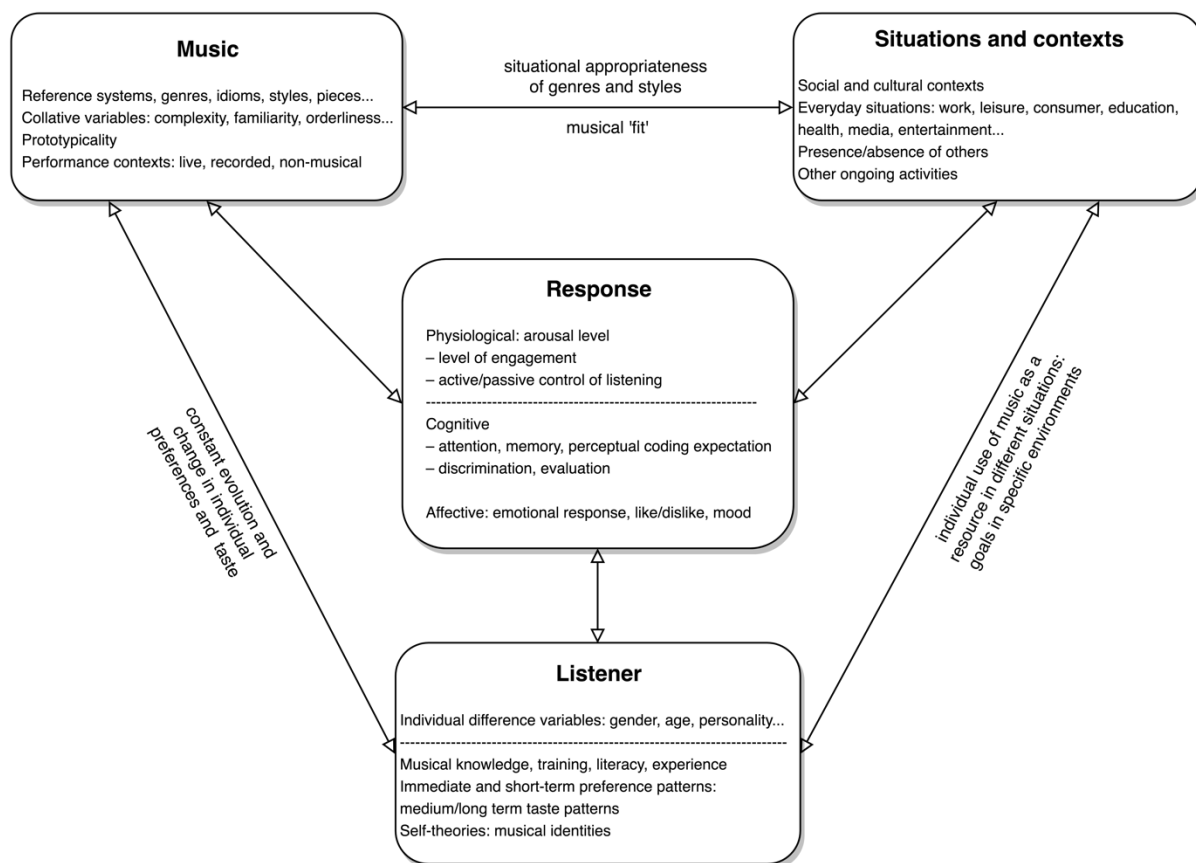


Figure 1 Hargreaves, MacDonald and Miell's Reciprocal Feedback Model (2005).

The Reciprocal Feedback Model (Figure 1) positions music, the listener, and the situation and contexts as three interrelated but discrete sets of variables. These three sets of variables have been explored in this chapter. Within the model, the sets of variables are positioned as to interact with one another. Firstly, the bi-directional interaction between the situational and listener variables highlights the utilitarian nature of listening materials with particular reference to listening as a tool for goal acquisition. Although presented as a smaller aspect in the model, it is arguable this should be the starting point for the model, as all listening (as conceptualised in this thesis) is in some manner an expression of current goals for the listener. Secondly, the listener and music variables are shown as bi-directionally interacting, giving rise to constant development and shifting of tastes and preferences. However, this also lacks a substantial concept: that of learning and rehearsal as suggested by van Goethem (2010) and Schäfer (2016), feeding back into one another to reinforce effective listening strategies. Thirdly, the music and situation variables bi-directionally interact to allow the musical materials to be situationally appropriate. Finally, all three sets of variables are shown to interact and feedback into/from the central *response* of the individual to the situation, resulting in physiological, cognitive and emotional changes.

The model takes “into account the many relevant personal, musical and contextual variables” that influence our listening (Hargreaves, MacDonald and Miell, 2005, p. 7). Furthermore, these three sets of variables give rise to a response within the listener and shift it through music-facilitated goal attainment processes. However, the authors suggest a further step: “feedback”. In the Reciprocal Feedback Model, all three sets of variables and the responses are capable of feeding back into one another, allowing for constant reappraisal and shifts in responses to occur. This feedback is a key element that should be reaffirmed as it allows for constant reappraisal to occur on the part of the listener, in turn shifting aspects of their overall music-facilitated goal attainment process. Furthermore, it allows for constant change or flux of goals at the whim of the listener, or as the contextual variables dictate. This constant reappraisal of goals is key in explaining the changing goals and our shifting responses over time.

2.4.1 Reciprocal Feedback Model 2nd Iteration

Although the Reciprocal Feedback Model is capable of expressing some of the processes and responses that occur during listening, it lacks some additional theory that has been established in this chapter. Several alterations are required to fully incorporate the established theory of goal-orientated listening. Firstly, a greater emphasis should be placed on the goal portion of the interaction between situation and listener. Doing so would reassert the oft-forgotten axiomatic driving forces behind listening behaviours, and place goal attainment as the central concept in all listening episodes. Secondly, the notion of rehearsal and awareness should be introduced. Given the model explicitly includes the concept of feedback and cyclical reappraisal of listening, rehearsal and awareness are strongly inferred by the design yet are not expressly stated. Both Greasley (2008) and Schäfer (2016) both identify the positive impact of rehearsal on the efficacy of our music-facilitated goal attainment, yet the concepts are absent from the model as it currently stands. Thirdly, the items listed within each component should be reassessed and expanded with a view to the variables suggested by Greb, Schlotz and Steffens (2017).

Finally, although the model allows us to conceptualise listening as a product of and/or being influenced by context mediated by the listener, and as a consequence of goal orientation, the *response* component of the model lacks a full appreciation of functionality as proposed by Schäfer. The original conceptualisation of *response* presented a combination of regulatory theory and mechanisms by which we respond to musical stimuli (see Juslin *et al.*, 2011b). It does not account for a wider appreciation of the functionality music can have for us,

particularly from a social perspective (which is not included within the model) and presents a restrictive view of the functionality music may have for emotional, physiological and cognitive aspects of the self. The limitation present in the *response* component of the model is a mirror of the limitations of regulatory theory and arguably contradicts (or at least severely restricts) the possibilities of music-facilitated goal attainment. As such, there is no provision within the Reciprocal Feedback Model and associated theory that adequately depicts *response* appropriately.

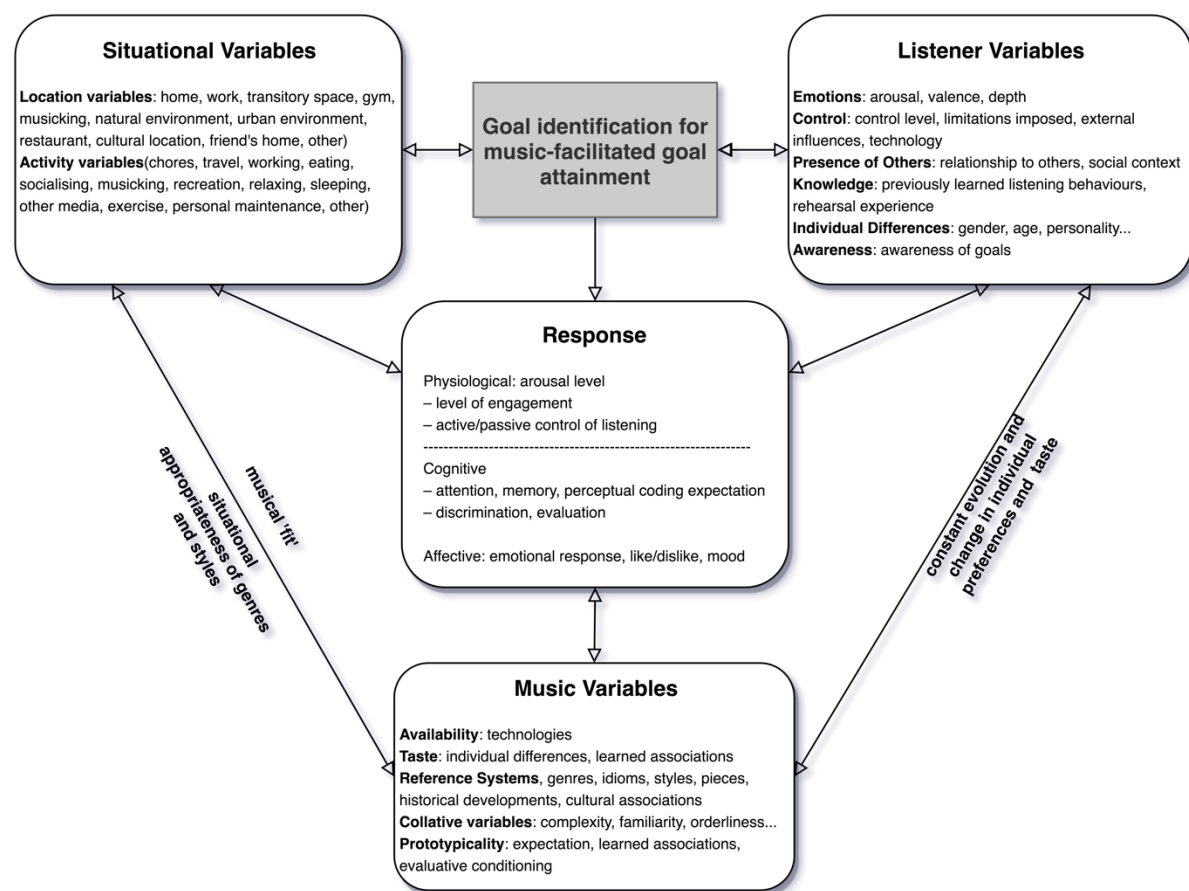


Figure 2 2nd iteration of the Reciprocal Feedback Model including the contextual triad and music-facilitated goal attainment

In this second iteration of the model (Figure 2), several changes have been made by this author. Firstly, in accordance with the aforementioned criticisms, the model has been rotated and music-facilitated goal attainment listening been placed as the key component that allows for negotiation of goals between the listener and situational variables. The music-facilitated goal attainment component of the model is positioned as a mediating force between both listener and situation, which must occur in a bi-directional manner to allow for such negotiation. Furthermore, the music-facilitated goal attainment component also presents a unidirectional relationship to the *response* component, ensuring the only possible reappraisal of goals must

occur through the feedback occurring from the *response* component to the three larger sets of variables of the contextual triad i.e. goals do not change at random, rather they are a consequence of changes to other variables within the contextual triad. Also, both the awareness and rehearsal variables have been included within the listener component. Thirdly, the specifics within the three sets of variables of the model have been altered and expanded to include the variables of Greb, Schlotz and Steffens and the theory explored in this chapter.

However, the issues raised with the *response* component of the model still remain. *Response* as conceptualised by Hargreaves, Macdonald and Miell is limiting in the extreme, and does not account for much of the functionality that may be possible through listening. As such, Hargreaves, McDonald and Miell's is a highly useful lens from which to explore the uses of listening, but *response* should be replaced with an alternative concept that is capable of encompassing all aspects of the self which music can act upon. Given that functionality has a broader scope than regulatory theories, another approach is required to fully capture utilitarian listening's possibilities. Here, it may be prudent to return to the aforementioned axiomatic notions of music listening as a goal-orientated activity; something grounding in utility and possessing functionality. Indeed, replacing *response* with phrases such as 'use', 'reason' or 'driver' may reveal more about the potent functionality of music listening. However, to fully realise the proposed third iteration of the Reciprocal Feedback Model to include a wide range of functionality requires a further investigation into the possible benefits music listening affords. Thus far music-facilitated goal attainment and the contextual triad presents the 'what' and 'how' of listening episodes but does not reveal the specifics of 'why' listeners elect to listen or the different manners in which music can help them.

2.5 Goals & Context: A Summary

This chapter has presented a thread of investigation that positions both the drivers for listening and the context in which we listen as key aspects of music-facilitated goal attainment processes. Firstly, the concept of goal-orientated listening was presented. It has established listening as a product of the world in which we live and shown our employment of musical stimuli as an act of goal orientation informed by our surrounding contexts. Further to this, the chapter then explored the contextual triad, comprising of three sets of variables that influence most listening episodes. This chapter only considered situational variables (location and activity), and listener variables (emotion, control, rehearsal, and awareness) as pertinent to the discussion and following investigation. This thesis does not consider musicological variables, instead placing

musicological features as beyond the scope of this research. The justification for this was to allow for idiosyncrasies in the way in which listeners determine their goal orientation requirements and accounts for ‘hidden’ variables such as taste.

The final section of the chapter combined the previously established theory concerning music-facilitated goal attainment and the various pertinent variables of the contextual triad into a cohesive theoretical model. This model was based on the Reciprocal Feedback Model by Hargreaves, MacDonald and Miell (2005). This model was the only theory that expressly accounted for goal-orientated listening *and* the influence of context. Although many other researchers consider these aspects as integral to listening, this model was the only one that positions the experience as distributed across the various variables rather than placing the listener as the central component. However, the original model was not entirely fit for purpose, having been originally designed to explain musical communication in live music scenarios. As such, a reconfigured model was presented that did account for the technologically augmented nature of contemporary listening (moving away from live music as the de facto listening experience) and places goals as the most important critical component in utilitarian listening. Finally, the section questioned whether ‘response’ was the best way to conceptualise the outcomes of goal-orientated listening. The chapter has begun construct a body of research that will inform a theoretical model of contextualised music-facilitated goal attainment (Aim 1). The chapter has critically interrogated music-facilitated goal attainment and the potential influence of contextual variables in goal orientation (Objective 1) and begun to interpolate and develop a theoretical model of the interactions between situation, music, listener, and goal orientation (Objective 2) in the form of the Reciprocal Feedback Model.

The next questions to address within this literature review concern an alternative to the *response* that fully incorporates the breadth and variability of goal-orientated listening. With *response* clearly an overly limiting concept, how should we best conceptualise functionality? How might we better explain our employment of music for goal attainment? This may allow us to explain the specifics of *what* music can do for us. What are the different goals music can aid us with and how should we best conceive of them? Having established the broad concepts of music-facilitated goal attainment and the importance of the contextual triad, the following chapter will interrogate the ‘use’ and ‘function’ of music (Objective 3) and draw on the newly introduced theory to continue the development of the Reciprocal Feedback Model (Objective 2).

3.1 The Uses and Functions of Music

Ain't there one damn song that can make me break down and cry?

- David Bowie "Young Americans" (1975)

We *use* music; that is to say music has some functionality for humankind beyond aesthetic value. The concept of music as merely entertainment or something diversionary does a great disservice to music's ability to engage people, and undervalues its potential benefits (Sloboda, 2005b, p. 216). Like other cultural commodities, music is not necessary for life, but music exists in a space beyond commodity, thanks in part to the recent 'spotification' of music and the celestial jukebox. David Bowie proposed that we should consider music a resource similar to water (Pareles, 2002). This resource is used for goal attainment via the process of listening. These goals are related to the context in which we listen, and likely stem from or are related to concurrent activities being performed. According to the Reciprocal Feedback Model proposed by Hargreaves, Miell and MacDonald (2005), when music is employed by the individual in context to engage in music-facilitated goal attainment, the listening results in some form of 'response'. However, *response* as it appears in the model has been identified as an overly limiting construct within the model, as it does not account for approaches beyond the confines of emotional regulation theory. How then should the response component be reconfigured, based on established theory, to account for this broader, more holistic view of listening? How the outcomes of goal-orientated listening could be framed or interpreted is not known.

The following chapter explores several key points that begin to finalise the theoretical grounding of the thesis. Firstly, the chapter examines the work of Alan P. Merriam on the uses and functions of music to scrutinise the outcomes of goal-orientated listening within a theoretical framing. The chapter then examines issues of terminology that pervade and muddy the field before then exploring the work of Merriam and Gregory, and the uses of music as distinct from functions to aid in differentiation of use and function further. The remainder of the chapter is concerned with developing a comprehensive understanding of the functions of music. A review of the research into the functions of music presents a series of key studies and findings since Merriam's initial publication. The review serves to highlight the similarities and dissonances between various studies, and summarises the salient findings of eight key studies. The chapter ends with a summary of the functions of music and also presents the final iteration of the Reciprocal Feedback Model that replaces *response* with *functions*. With this model is an explanation and defence of functions as the most appropriate lens from which to view goal-

orientated listening. This final section includes a summary and begins to suggest a direction forward for this research.

3.2 The Origins of Use and Function

Many researchers have approached the problem of music's functionality and, through both hypotheses and original studies, have found multiple possible ways in which music can fulfil goals. However, although there are many differing and complementary ways in which music can be employed, an issue arises. In the aforementioned studies and theory, there has been no outline or framework suggested that adequately expresses concepts of 'response' to musical stimuli in specific terms, rather focusing on the underlying means by which responses are articulated (arousal changes, emotional responses, physiological and cognitive changes). As such, to express what music is capable of doing for us, we need to qualify the specifics of what such phrases mean⁷. Before it is possible to explore the specifics of music's possible functionality, we require an understanding or framing in which it is possible to situate the meaning of such goal-orientated listening outcomes.

Merriam's *The Anthropology of Music* (1964) represents the first concerted attempt to outline this utilitarian perspective of music with distinct definitions, drawing a dividing line within the text as to what constitutes *use* and *function*. For Merriam *use* is concerned with how music is employed in human society, firmly rooting it within a context, whereas to study *function* is to investigate the *why* of music or the directive functionality of music in that context. Merriam attempted to define the terms as:

Use then, refers to the situation in which music is employed in human action; *function* concerns the reasons for its employment and particularly the broader purpose which it serves.⁸ (Merriam, 1964, p. 210)

Yet, even this seemingly straightforward definition lacks finesse when considering the breadth of research within ethnomusicology and music psychology. Within the literature it has been

⁷ Thus far, this thesis has purposefully used the phrases 'employ' and 'engage' and made reference to 'functionality'. These terms were specifically used to avoid conflation with the following discussions and studies.

⁸ Additional formatting has been added to aid clarity.

possible to identify three potential lines of demarcation when considering the use or function of music. This review will employ the following definitions of the terms.

- **USE:** *The context or situation in which music is employed – akin to Merriam’s initial description of use ranging from physical, social, intrapersonal, emotional, and cognitive.*
- **FUNCTION:** *The rationale for the use of music, the driver, or decision underpinning its situational employment – Merriam suggests that this is deeper and more nuanced than simple use and is concerned with the why of use.*
- **MECHANISM:** *The physiological or neurological processes by which the music affects us – this will be referred to as the mechanism of effect. Whilst not overtly discussed within Merriam’s research it is certainly something others have considered, particularly Juslin’s Emotional Responses to Music (2012). Whilst a neighbouring area and often appears in related literature, this is generally beyond the scope of this review.*

To demonstrate these concepts, one can consider a parent’s lullaby to their child. Music is used during this activity to facilitate interaction between the individuals; it is drawn into action and used by the parent. However, the function of the music is to regulate the mood or arousal levels of the child, not simply to be sung by the parent. The music has the ability to affect the child’s arousal through evaluative conditioning. In this example (according to Merriam’s distinctions) a lullaby is the use, and emotional regulation is the function. The evaluatively conditioned response is the mechanism of effect not discussed in Merriam’s definitions.

These three aspects also depict a graded conception of the area of action. We can conceive ‘use’ as an overarching macro level activity; it exists within social constructs as something situated around human activity; it represents the wider considerations of the contextual triad. ‘Function’ manifests at the meso level and is concerned with individualistic responses to current goals. As such, ‘function’ is the response of the individual to broader aspects of ‘use’ (or context). At the micro level exists the individual ‘mechanisms of effect’, creating the meso function through specific neurological or biological processes. All three levels inform one another in a bi-directional relationship. Firstly, macro contextual concerns inform the meso level goals for musical engagement, which in turn generates a response on the individualistic micro level through human biology. In the bottom-up arrangement, the micro level responses influence our meso level functional relationships to the context, which inform the macro level

and possibly alter our environment and goals. These can be observed a proposed visualisation of the relationship shown in Figure 3.

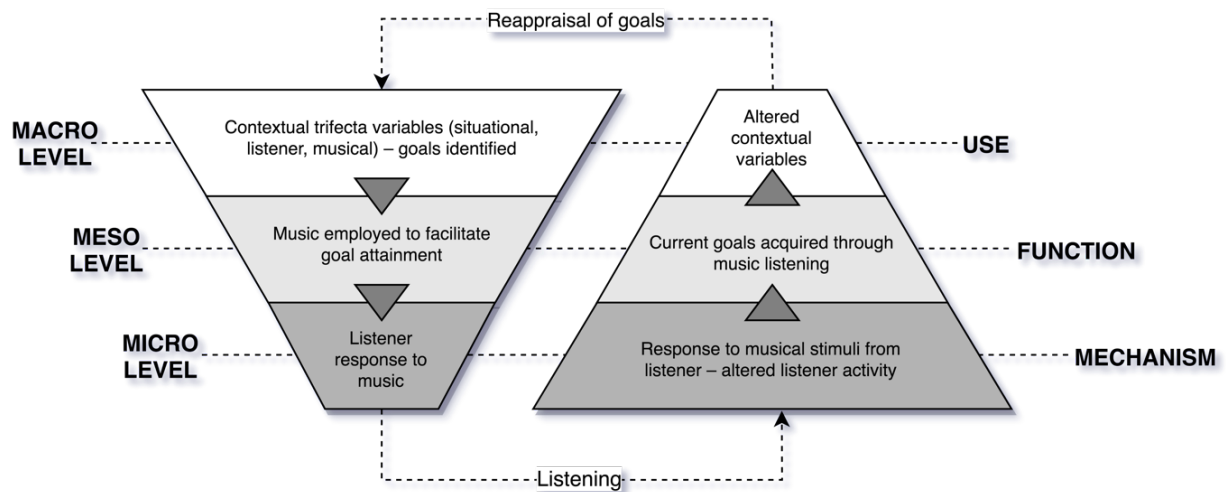


Figure 3 Hierarchical relationships of Use, Function, and Mechanism

Merriam's work provides an alternative to 'response' within the Reciprocal Feedback Model. Given that 'use' and the contextual triad could be considered different perspectives of the same phenomenon, and the 'mechanism of effect' as explored by Patrik Juslin goes beyond the scope of this research, 'function' presents the most appropriate and useful concept to integrate into a newly refined Reciprocal Feedback Model. Indeed, Juslin's work offers a substantial level of specificity as to the individual mechanisms but does not consider any higher-level contextual considerations beyond those within the body of the individual listener. Conversely, uses of music are far too broad and can be as varied as any combination of contextual or situational variables.

However, here functions offer a possible insight into both the processes of music-facilitated goal attainment and the influence of context on those processes. Merriam defines functions as both the reasons and the purposes for the listening; as such we can consider function as both why we elect to listen and our response to the stimuli and contextual considerations. Arguably, we may perceive function as both an expression of the initial driver for the engagement and the effects or outcomes of the listening i.e. music employed for mood improvement functions both infer the reason and outcome is an improvement in mood. Clearly, this does not specify the particulars of the functions of music or what they may be, but it does provide both a practical framing of the concept and connect the concept more readily to goals which are themselves heavily contextually-dependent.

3.2.1 Problematic Terminology

Researchers in musicology and ethnomusicology lack consistency when dealing with the terminology and the concepts of *use* and *function* of music. This discrepancy presents a significant epistemological challenge as the terms are used often interchangeably, with little consideration for the differing implications of the terms themselves. Whilst Merriam's work is considered pioneering and a significant touchstone within the literature, his lines of demarcation have been ignored. Possibly because of the contextual or situational importance Merriam places on the concept of *use*, his work is seen as a broader view of music: music as something that exists in a symbiotic relationship with the world, rather than as discrete objects of aesthetic scrutiny. In recent years this interconnectedness suggested in Merriam's work is something academics appear to have taken to heart, even if the defining line between use and function has been largely ignored. Yet, the fact remains that there is huge disparity in the way concepts of *use* and *function* are employed within the available research, with terms often being interchangeable with little effort made to adhere to Merriam's distinctions.

Given the difficulties presented by the vast majority of literature in this area, and the inescapable and interwoven nature of the concepts present, it is clear that Merriam's attempts to create a standardised lexicological approach to the field has not been widely adopted. As a result, this text will employ the terms as defined above, treating the third potential branch as neither *use* nor *function*, instead employing the terms *mechanisms of effect* to refer to these concepts when required.

3.3 The Uses of Music: A Limited Field

The psychology of music is concerned with "the structure and content of music experience" (Sloboda, 2005b, p. 199). These structures and experiences have been explored with some fervour since the seventeenth century (Williams, 2004, p. 123). Yet, even to the present day, there has been little attempt to examine music in a systematic manner to uncover its *use*. Merriam's proposed definition of *use* is firmly rooted in social practice when he suggested that:

When we speak of the uses of music, we are referring to the ways in which music is employed in human society, to the habitual practice or customary exercise of music either as a thing in itself or in conjunction with other activities. (Merriam, 1964, p. 210)

Without situation, and the societal constructs surrounding the context, it is not possible to define music as being *used*. Even solitary use exists within the societal dimension, being part of the world. It is notable by its juxtaposition to the larger populous; exclusion (whether self-imposed or enforced) can only exist in relation to the whole. Merriam's inclusion of the phrase "in conjunction with other activities" may perhaps be the most valuable portion of his definition. It not only places the musical materials in a social framework, but also reinforces the importance of the temporal and physical modalities by which we live. No musical activity, or activity involving music, can exist without being rooted in the temporal, in addition to the social, realm.

A study by Gregory is the most comprehensive review of societal music use available (see Gregory 1997). Yet, this review is focused on non-western, traditional roles of musics within societies (Gregory focuses mainly on traditional African societies, although stresses these uses may be applicable to many traditional cultures). Gregory identified lullabies, games, work music, dancing, storytelling, ceremonies and festivals, battle, communication, personal symbol, ethnic or group identity, salesmanship, healing, trance, and personal enjoyment as uses of music. Many of these suggested uses align themselves well with Merriam's initial description of use, being routed in context, temporally instantiated, and connected to some form of physical act. However, some prove problematic as they are not inherently connected to a physical action as inferred in Merriam's work. Those relating to intrapersonal and interpersonal tasks (Communication, Personal Symbol, Ethnic Identity) should more rightly be considered function. I would propose that these are not in fact uses of music at all and are a prime example of the conflation of terminology within the literature. There are those that suggest that, given the ubiquity of music, ethnomusicology is an approach that allows us to engage with all forms of music, not simply non-western music⁹ (Gregory, 1997, p. 123). The ethnomusicologist is primarily concerned with "the culture and roles played by music within it" (ibid.) thus sidestepping the ethnocentric grounding of the study. Gregory's work provides a valuable, but vastly incomplete picture of music with some erroneous inclusions. It is clear that music is

⁹ With respect to *use* there are no other studies that present such a broad and in-depth analysis, and certainly none that focus on the Western society. Whilst a wealth of ethnographic evidence exists into Western music cultures and scenes, there are none that purport to represent a *use* of music; they do not invoke Merriam. This is not to suggest researchers do not appreciate the role of music within society, rather that they simply lack a cohesive analysis of these roles presented under the bracket of use.

certainly a resource when considered from this perspective (North, Hargreaves and Hargreaves, 2004, p. 42).

Often within Western society music is seen as a product or commodity (ibid.) and not a resource that is drawn into use by agents. This conception of music as a resource is readily apparent in Gregory's research. Excluding the work of Gregory, there have been no attempts to systematically map the state of music *use* in societies in a broad sense according to Merriam's definitions (although as will be shown, there are numerous studies of *function*). However, Gregory's initial publication may represent a starting point from which to extrapolate outwards were such a study attempted in the future.

To conclude, it is arguable the concept of *use* does not cast light on real-world listening habits. The lack of salient research into the field limits understanding, but this is likely indicative of an inherent quality of the listening within context (and the contextual triad): that uses of music are almost infinitely variable. Just as individual components within the contextual triad and its associated variables are mutable, each possible configuration of situation, listener, and music gives rise to an incredibly mutable field of use. As such, expecting use to shed light on the realities of listening may be foolhardy. Use, therefore, is as changeable as the weather (both figurately and literally).

3.4 The Functions of Music: Historical Trajectories

Given the pervasiveness of the concept of 'music as a resource' (e.g. North, Hargreaves and Hargreaves, 2004, p. 42; Kusek and Leonhard, 2005, p. 8) and it is highly probable that this resource is drawn into action on a daily basis for commonplace functions. This notion is supported by Sloboda, O'Neill and Ivaldi's axiomatic position. The 2nd iteration of the Reciprocal Feedback Model provided a model that described music aiding in goal attainment where it pertained to emotional, physiological and cognitive goals. However, this significantly limits the roles music may fulfil and reduces the possible granularity of its functionality. What of the social purposes that music serves? Is music capable of acting upon those aspects of the self? Often, these considerations are left unexplored in goal orientation and self-regulation literature. Yet, listening goes far beyond these boundaries. There is a large corpus of evidence that suggests music can act beyond the limitations of the *response* component of the Reciprocal Feedback Model. This 'functions literature' allows us access to those domains of functionality that are not referenced in the Reciprocal Feedback Model.

The following review explores key contributions to research into the functions of music. The review is not exhaustive but covers pivotal developments. Beginning with the inception of the notion that music is functional and useful with the work of Alan P. Merriam, the review continues through revisions of the original theory to more sociological and psychological taxonomies. This is then followed by more recent taxonomies of the functions of music, building to the most contemporary. An exhaustive literature search reveals that there were few explorations of the functions of music in the time between Merriam's original publication and the 1980s¹⁰. The review is presented chronologically, showing the development of concepts over time, with the exception of the work of Bull and Williams. This is at the close of the review, as the ideas presented do not easily sit within the narrative of the development of theory.

The review does not engage with evolutionary and biological perspectives of music, and foregoes explorations into the origins of music. Whilst the origins of music might reveal a deep and somehow universal 'why' of music (most authorities suggest initially for communication and display: see Mithen, 2006), it does not offer clarity as to the current state of listening. Indeed, rarely do these perspectives consider listening, instead concentrating on the act of musicking or, at the very least, grunting or dancing to something that could be considered 'proto' music (e.g. Fitch, 2006; Mithen, 2006). Rather, this work explores contemporaneous, episodic listening, and how this impacts the listener.

The review aims to develop several key points concerning the functions of music. Firstly, the review highlights the development of theory beginning with Merriam's original provocation to more contemporary, even technologically grounded conceptualisations of the functions of music. By tracing the history of the development of the functions of music based on key studies, the review builds a nuanced picture of the current state of the theory. It demonstrates the development of the ideas underpinning the various taxonomies, and the iterative nature of much of the research. Secondly, the review emphasises the variation in terminology between many researchers, alluding to the issues already raised concerning inconsistent terminology. Thirdly, the review also demonstrates areas of discord between the specific functions of music

¹⁰ Study 1 evidences this literature search. Only (Mussulman (1974) and Gantz *et al.* (1978) were identified between Merriam's original publication and the 1980s.

present in various taxonomies whilst reaffirming the importance that the functions of music should be explored further. Fourthly, this research not only reinforces the importance of the functions of music as a way to frame listening outcomes, but also connects with a substantial quantity of the established theory concerning the contextual triad. Rather than conceptualising the outcome of goal-orientated listening as a ‘response’, the broader functionality offered by the functions of music incorporates both the impetus for musical engagement and its effects. As the contextual considerations, or ‘use’, are established within the Reciprocal Feedback Model model, what can now be revealed about the functions of music listening? And, how might the functions of music further illuminate the Reciprocal Feedback Model?

It should also be noted that the theory and the various taxonomies of the functions of music presented here are rarely all-encompassing. It would be appropriate to suggest that the functions of music is an disparate field of study, and that the functions of music may likely always remain ‘unfinished’ owing to constant musical and technological developments, such as increased (artificial) intelligence in our music recommendation systems and increasing tendency towards omnivorous tastes in contemporary listeners (e.g. Gunther, 2019; Verboord, 2019). The studies examined here often focus their efforts on a particular disciplinary perspective or investigatory approach. Clearly, this is informed by researcher background and discipline, but also by the pre-existing literature. The result of such mono-disciplinarity is reduced dimensionality in the research outcomes. As such, the studies discussed here may not accurately represent the topography of the field but do outline its breadth.

3.4.1 Merriam’s Inceptive Taxonomy

As previously explained the anthropologist and ethnomusicologist Alan P. Merriam was the first scholar to propose music as having distinct use and functions. The notion that music was a means of conveying messages or as a means of portraying rhetorical constructs was not new (see Mattheson and Lenneberg, 1958). However, Merriam’s background in both anthropology and ethnomusicology positioned him to observe and articulate a new conception of music within a society. In opposition to the perspectives of rhetoric or phenomenology that had gone before, Merriam situated the importance of music not within the musical materials themselves, but rather within the employment of those materials within a society or a series of social constructs. Merriam posited music had two socially constructed facets: use and function.

Unusually, given Merriam's disciplinary grounding in social perspectives – anthropology and the strongly connected field of ethnomusicology – he does not ground music's primary action as a function of the makeup of a society. Instead, he argues that music's effects are a function of emotional expression. Merriam prefaces his initial descriptions of functions by suggesting there are potentially many other functions not included in his publication that could be elicited by emotional expression. Merriam offers some room for manoeuvring here, implying emotional functions of music are an important facet of its employment in society, but may not be exclusively constrained by emotional considerations. However, he does not suggest what these other aspects may be. We can glean some understanding of the possible other domains of action when exploring the latter part of Merriam's listed functions (Figure 4).

Figure 4 Merriam's functions (1964)

Merriam (ibid., pp. 222–227) highlights 10 specific functions of music in his inception list. Whilst these functions are limited when compared to other contemporary taxonomies, they do represent a significant and lasting contribution to the body of research in the functions

Merriam (1964)	
○	Emotional Expression – Music is a means of expression for the player and the listener.
○	Aesthetic Enjoyment – The notion that music can exist as a work that can provide enjoyment and engagement from a cognitive or analytical perspective.
○	Entertainment – Musical materials can be enjoyed by listeners.
○	Communication – Music conveys emotional or something similar to emotion, although the exact meaning is often difficult to define beyond the musical materials, and rarely crosses cultural boundaries.
○	Symbolic Representation – Music is capable of representing other things, ideas or behaviours.
○	Physical Response – Dance or musically inspired movement occurs in many societies. However, Merriam prefers to focus on concepts of possession, religious ceremonies, battle, and hunting.
○	Enforcing Conformity to Social Norms – Music can be employed to highlight aspects of society.
○	Validation of Social Institutions and Religious Rituals – Music is often employed in religious and social ceremonies to highlight aspects of the proceedings.
○	Contribute to the Continuity and Stability of Culture – The existence of music and its functions within a society adds to the social cohesion of a community, thus performing this function. We all “play a part” in the social construction of society through music (ibid., p. 225)
○	Contribute to the Integration of Society – Whereas in the previous function engagement in music allows for social cohesion, in this function we see the values of music as an activity adding to social cohesion.

literature, and arguably inspired the field's creation. Although, as will become apparent in later studies, the functions in Merriam's study are limited in number, their scope is fairly comprehensive and wide ranging, and could almost be said to represent larger categories of functions than smaller, precise functions.

The emotional and social foundations of Merriam's work are made plain in his description of functions. However, we can also observe the limitations of the work in some of the examples

used within the descriptions. Within the text, we find examples of Navajo, Yoruba, Pacific Islander, and Yirkalla cultures used to articulate the material. Obviously, these functions are entirely valid, particularly so in the anthropological examples cited by Merriam, but consequently the question of external validity rears its head. We should question how appropriate it might be to compare these cultures' functions to those of contemporary Western society. The democratisation of technology and recorded music (and its ubiquity) might infer different functions of music for different socio-cultural groups. Irrespective of the specific divergences between Merriam's original source cultures and contemporary Western society, we can state that there is only scant work exploring the functions of music as defined by Merriam in non-Western societies beyond the initial founding publication.

3.4.2 Hargreaves and North's Re-Interpretation of Merriam

Considering the ontological and methodological specificities of Merriam's original publication, we can see areas of potential tension between the ethnomusicological and sociological perspectives of music in culture. The former is specific and ethnographically rooted in a particular culture or collection of cultures, while the latter attempts to find broader themes in contemporary society (as so far as music sociology is concerned). Hargreaves and North (1999) reviewed Merriam's initial taxonomy with respect to contemporary Western society to redefine and rehabilitate the work.

A prime feature of Hargreaves and North's reassessment of Merriam is the influence of recording technologies on listening behaviours. They argue that music has, as a result of technological augmentation, become "individualised" (Hargreaves and North, 1999, p. 73) and has "become a soundtrack to everyday life, and thus a central part of personal development and identity for many people" (ibid.). Rather than ground their reappraisal of Merriam's work in the ethnographic contexts in which it was conceived, Hargreaves and North attempt to reinterpret the taxonomy for Western cultures, with specific emphasis placed on the everyday or mundane engagements many listeners may have with music. Given this grounding, their reassessment of Merriam's taxonomy may lead us closer to a more representative taxonomy of function.

Hargreaves and North (1999)

- **Emotional Expression** – Music is “a vehicle for feelings which may not be possible to convey by other means” (*ibid.*, p. 73). They identify the importance of context for music to inspire emotions in the listener.
- **Physical Response** – In addition to dance, ritual, hunting etc. Hargreaves and North augment their reassessment of the list by including ‘chills and thrills’ as an additional expression of physical response.
- **Aesthetic Enjoyment and Entertainment** – The authors highlight aesthetic appreciating and entertainment as linked and relate it to individual differences. They also suggest music as a product could indeed be perceived as part of this grouping of functions.
- **Communication** – The authors reassert that “these structures only acquire musical meaning when they are interpreted in terms of the agreed cultural conventions” of the given society (*ibid.*, p. 74).
- **Symbolic Representation** – If, as Merriam posited, music is capable of representing ideas, concepts, and information, then there is an implied level of communication occurring. However, they further expand on Merriam’s definition by citing narrative or programmatic music as an expression symbolic representation.
- **Societal Functions** – Hargreaves and North group the final four of Merriam’s functions together, although they do not explicitly title the grouping (here Societal Functions is used), they are “clearly and explicitly social in nature” (*ibid.*, p. 75).

Figure 5 Hargreaves and North’s (1999) reappraisal of Merriam’s original functions

The main findings of this reassessed taxonomy (Figure 5) can be summarised relatively simplistically. Firstly, the emotional focus of many functions has contributed to the popularity of music psychology as a lens through which to study musical engagement. Secondly, the authors take a broader view of the material and suggest where grouping or interconnectivity might be more appropriate than presenting all functions as discrete. Finally, they suggest three additional social functions of music that are not discussed in Merriam’s original taxonomy.

The suggested changes to Merriam’s original taxonomy appear to widen the scope of the functions of music, particularly from a sociological perspective, and also hone the accuracy of the definitions of each function. Perhaps most importantly, Hargreaves and North’s reassessed taxonomy shows the innate resonances between certain functions, something often left undiscussed before this publication. This interconnectivity is of vital importance when studying the functions literature and role of context in listening (as will become clear later in this project). For example, the connection between emotional expression and physical response both suggests a link between two functions when considering societal context but also ties these concepts to self-regulatory behaviours. Additionally, Hargreaves and North offer three further functions that are not included in the original taxonomy (Figure 6

Figure 6 Hargreaves and North’s (1999) novel functions

). The authors contend these functions reveal the everyday behaviours of the individual.

Hargreaves and North (1999)

- **Self-identity** – Music is an important part of identity formation and the expression of that self-identity. They cite listeners (particularly adolescents) using music to define and express their identities. Belonging and groups such as sub-cultures or ethnic groups may be implicit here.
- **Interpersonal Relationships** – Preference and musical taste are strongly related to social groupings and individuals deliberately align their choices to aspirational cultures i.e. cultural or social capital.
- **Mood Management** – “there is clear evidence that music serves as a means of mood management in everyday life”(ibid., p. 80).

Figure 6 Hargreaves and North's (1999) novel functions

Hargreaves and North (ibid., pp. 79–80) offer a great deal of additional information and clarity to Merriam's original taxonomy. They not only 'update' the taxonomy for a more technologically-enabled age, but also expand the possibilities of music's function to new areas not considered by Merriam. Their inclusion of additional variables such as individual differences and cultural issues also adds nuance and a level of flexibility not present in the original taxonomy. Hargreaves and North's taxonomy also represents one of the most stable and commonly referenced publications in the body of functions research due to its broad scope and specificity.

3.4.3 Sloboda, O'Neill and Ivaldi's Music Activities

Experience sampling methodology (ESM) provides valuable real-world data regarding participants' musical behaviours and exposure in a relatively non-intrusive manner. Sloboda, O'Neil and Ivaldi employed this technique to study participants engagement with music as it enabled them “to examine individuals' subjective experience during 'real' evolving musical episodes in the context of everyday life situations” (Sloboda, O'Neill and Ivaldi, 2001, p. 11).

Their findings differ somewhat from other publications. They do not attempt to synthesise a list or framework of musical function from their findings, rather they identify groupings of situations that may contain music, and the associated activities. In this way, we can perceive the findings of the study as not situated in the functions of music but rather as more related to the macro level of 'use' i.e. context (although it is never specified as 'use' by any definition). There is no discussion of *why* individuals are engaging with the musical material, the underlying rationale for the individual, the goals present in the episodes, or what contextual drivers may be responsible for the engagement. As to the final point, it may be possible to infer a connection between the use of music in a situation and its demands, although the authors frame this

question in a more direct manner as music “more likely to accompany some activities more than others” (ibid., p. 14).

Sloboda, O'Neill and Ivaldi (2001)	
○	Time fillers – doing nothing, waiting
○	Personal (being) – states of being (e.g. sleeping, waking up, being ill, suffering from hangover)
○	Personal (maintenance) – washing, getting dressed, cooking, eating at home, housework, shopping
○	Personal (travelling) – leaving home, driving, walking, going home
○	Leisure (music) – listening to music
○	Leisure (passive) – watching TV/film, putting on radio, relaxing, reading for pleasure
○	Leisure (active) – games, sports, socialising, eating out, chatting with friends
○	Work (self) – writing, computer, marking/assessing, reading for study
○	Work (other) – planning for meeting, in lecture/seminar, making appointment, in meeting

Figure 7 Sloboda, O'Neill and Ivaldi's (2001) categorisations of musical activities

The findings of the ESM study show (ibid., p. 18) that half of all the reports they studied (musical and non-musical episodes) occurred within the home, with workplace accounting for 21%, and travel/transportation being the third most common location responsible for 10% of all episodes. From the groupings provided, the most musically prevalent episodes occurred during transportation, in shops, and during entertainment activities (87% of reports from these locations/activities contained

music), while those occurring within the workplace contained no instances of music. The authors suggest this separation of work from musical episodes may be down to “duty”, in that individuals appear to employ music to accompany activities undertaken out of “choice rather than duty” (ibid., p. 22). It is likely the social and professional conventions of the workspace have a heavy bearing on the lack of music during those activities, although this is not discussed and may require updating in more contemporary workplace environments with the rise in personal listening devices, internet connectivity and home working.

Furthermore, the study explored the main activity occurring during the musical episode. Only 2% of episodes noted music listening as the primary activity. Participants used music as an accompaniment to mundane, everyday activities. The authors grouped these activities into nine distinct categories relating to four overall concepts (time fillers, personal activities, leisure activities, and work activities), and sub-domains for each overall concept (Figure 7). This finding has two important ramifications. Firstly, this categorisation of activities has influenced further studies (particularly Greasley and Lamont, 2011), continuing this division of activities as an established and accepted construct (although, unfortunately, this study has not been repeated). Secondly, these categories and individual activities may impact our understanding of musical function. The authors do not correlate individual activities to music employment

frequency, a link that would have provided insight into which activities are particularly associated with music employment. However, they do reference activities to music employment. Travel (78% of episodes were musical) and personal maintenance (65% of episodes were musical) were rated as most frequent musically engaged activity categories. Work was rated as the lowest musical engaged activity (0% of episodes were musical). Whilst this data is relevant, it does not provide an insight into *specific* activities that were occurring during particular musical episodes, what specific functions may have been occurring, or the efficacy of music in these situations.

The aspect of choice represented in this study differs from the view presented in the music-facilitated goal attainment literature, and Hargreaves and North's reappraisal of Merriam. Rather than focusing on the notion that choice can alter regulatory efficacy, the authors suggest choice is invariably tied to situation. Sloboda, O'Neill and Ivaldi identify certain situations as being "high choice situations" (2001, p. 22), such as when alone, travelling, or at home, and activities involving elected behaviours rather than duty. They also identify "low choice situations" (ibid.) as those mediated by external factors such as specific locations (shops and gyms) or when in the presence of others. Whilst this certainly does not exclude the notion that choice and control can mediate the effectiveness of music-facilitated goal attainment listening, it offers a different, more contextually grounded lens through which to view listener choice (a field expanded on particularly by Amanda Krause, e.g. Krause, North and Hewitt, 2014).

This study is highly influential in the field of the functions of music for several reasons. Firstly, the categorisation of activities by the Sloboda, O'Neill and Ivaldi shows the first attempt to compartmentalise the musical lives of individuals specifically by context. This categorisation would be further employed by other similar studies. Secondly, whilst not a taxonomy of musical function, there are possible mediating factors highlighted in the prevalence or lack of use of music in particular situations, inferring external or internal variables related to the context may alter music employment by individuals (such as those variables encapsulated within the contextual triad). Thirdly, the study's findings provided the basis for further research into the functions of music. Finally, the differing views presented here regarding choice and control offer further evidence for researchers when considering how and why individuals may or may not listen.

3.4.4 Sloboda's Functions of Music

Building on the situational importance placed on music listening in the previous study, Sloboda continued to explore the field. Sloboda's *Exploring the Musical Mind* (2005a) explores location of listening and begins to connect these contextual considerations with music function, beginning to synthesise a more coherent taxonomy than those before by placing context at the heart of music listening activities, further support for the contextual triad's importance and relation to music-facilitated goal attainment.

Sloboda (2005)	
<u>Functions</u>	<u>Category</u>
Reminder of valued past event	Memory
Spiritual experience	Transcendent
Evokes visual images	Sensorial
Tingles/goose pimples/enjoyment	
Source of pleasure/enjoyment	
To put in a good mood	Mood Change
Moves to tears/catharsis/release	
Excites	
Motivates	
Source of comfort/healing	
Calms/soothes/relaxes/relieves stress	Mood Enhancement
Mood enhancement	
To match current mood	

Figure 8 Sloboda's (2005a) functions of music and categorisations

Sloboda's taxonomy was based on his previous work into music concurrent activities, but also draws upon data gathered by Sussex University's Mass-Observation Project (MOP). Sloboda employed the MOP Autumn 1997 responses as source material from which to infer functions of music. Unlike Hargreaves and North

reappraisal of Merriam, this study is grounded in everyday life, with data from non-specialists, and a large cohort (249 participants). It also represents the largest dataset used to develop a taxonomy of the functions of music at the time of Sloboda's publication. The primary contribution of Sloboda's analysis was to identify, name, and group the functions of music he observed within the MOP dataset. Sloboda (p. 325) grouped all functions into five distinct categories (memory, transcendent, sensorial, mood change, and mood enhancement). Some categories contain several functions, whilst others (memory and transcendent) only contain one function of music (Figure 8).

Perhaps the most noteworthy point from Sloboda's analysis is the inclusion and prevalence of the mnemonic possibilities of music: to reminisce, or as an aide-mémoire. The previously explored publications have not considered the importance of memory as a function in and of itself. It is feasible functions dealing with ontological security or self-identity may have some connection to the memory functions of music, but this link is never stated outright. It is also surprising that this function was the most common function within the dataset, with 50% of the

individuals reporting this function. One explanation for the absence of memory in other research is that the previous publications were built on researcher hypotheses, rather than employing participants for evidence-based study.

Other functions, particularly related to mood change or enhancement, show striking coherence with previous publications. Indeed, several of Sloboda's identified functions bear reference to previous publications. However, semantic differences can be observed here. Sloboda's inclusion of some items on the list of functions may not actually be functions according to Merriam's description. The physiological responses (tingles, goose pimples, shivers) listed within the Sensorial category may require re-examination. Although the previous taxonomies include reference to physiological responses, those listed by Sloboda differ in that they may not necessarily be the 'desired response'. In some instances such physical responses may not be the desired effect and merely be a by-product of the musical experience, begging the question whether listeners employ music to specifically feel these effects. However, without direct evidence to the contrary, it is feasible that inspiring tingles may be a function of music i.e. something listeners find useful. It should also be noted that the subheading within which Sloboda presents this information is 'Chosen personal uses of music' rather than 'function' - another conflation of Merriam's definitions.

The latter half of Sloboda's analysis of the MOP is dedicated to those activities that occur concurrently with music (Figure 9). Unlike the functions and his previous work into situations, Sloboda does not provide broader categorisations for this work, and instead lists the commonly occurring musically concurrent activities from the MOP. The most commonly occurring music use occurred during housework, and while travelling (although not on public transport) both reported as 22% of participants employing music during those activities. In contrast to Sloboda, O'Neill and Ivaldi's 2001 study, Sloboda found "desk work" was the second highest rated activity (14%) (the previous study did not find any instances of workplace listening). This may be due to sample size: the previous study only used eight participants compared to 249 participants in Sloboda's 2005 analysis. The analysis also identified some activities that were not identified in the previous study. Of particular note are smaller, transient moments in which individuals reported music listening: having a bath, singing along to, during romantic/sexual encounters. These had not previously been described in the 2001 study and adds to the corpus of literature of music-facilitated goal attainment contexts.

Sloboda (2005)	
○	To wake up to
○	While having a bath
○	While exercising
○	To sing along to
○	To work to (desk work)
○	To work to (housework)
○	On arrival home from work
○	While having a meal
○	Background while socialising
○	To accompany sexual/romantic events
○	Whilst reading
○	In bed/to get to sleep
○	While driving/running/cycling
○	While on public transport (Walkman)

Figure 9 Sloboda's (2005a) concurrent activities

Sloboda's 2005 analysis offers a refined version of the previous 2001 study, and further widens the scope for locating the functions of music in ecologically valid contexts. However, as pointed out by Sloboda in another publication, such analysis does not provide linking between possible functions and possible situations, and asks if there are more appropriate and intricate research methods that "will be able to uncover explicit or implicit functions associated with every deliberate act of music listening" (Sloboda, 2005b). As

Sloboda readily admits, this study is only one step within a necessarily broad approach to the field of the functions of music (Sloboda, 2005a, p. 330).

3.4.5 Greasley and Lamont's Engagement Studies

Greasley and Lamont's 2011 study explored how individuals engaged with music in everyday life. The main thrust of the research replicates Sloboda, O'Neill and Ivaldi's 2001 ESM study, but gathers additional information, allowing the authors to provide greater insight into the contexts in which listening occurs, some potential functions of music, and how the individual's level of engagement may alter the listening event. Greasley and Lamont do not use the functions identified in previous research; rather they attempt to build a novel list of functions of music by questioning individuals as part of the data capture process.

Greasley and Lamont questioned participants using an ESM procedure on both the location¹¹ and activities where music was part of the engagement. The authors identify eight locations in which music was commonly heard: home, workplace, transportation, social/pub, gym/exercise, shops, entertainment (i.e. nightclubs and bars), someone else's house. Home proved the most common location in which individuals reported, with an approximately even split between music and non-music episodes being reported, making up 64.6% of all locations. As with home, some locations provided very little difference between music and non-music episodes

¹¹ It should be noted that Greasley and Lamont use the term 'context' when describing location. Language has been altered in this review to maintain distinct terms as defined in this review.

(social/pub, gym/exercise, shops, and someone else’s house). However, other locations provided stark contrasts: workplace was twice as likely to be non-musical and accounted for 10.4% of all sampled locations, whereas entertainment and transport displayed a high frequency of music episodes (often being three times more likely to be music episodes). This is unsurprising given the social and entertainment value of music in social occasions, and the aforementioned predisposition of duty in Sloboda, O’Neill and Ivaldi’s 2001 study.

The study also refers back to Sloboda O’Neill and Ivaldi’s 2001, and their findings regarding activities. Their analysis shows the split between music and non-music episodes was approximately even, replicating the finding from previous study. The study also presents the breakdown of music and non-music episodes by activity (time fillers, personal, leisure, work, other). However, this study did not connect which activities occurred in which locations. This information would have been invaluable in further defining what locations and activities are most strongly correlated to music use. Whilst it is possible to make some inference of connection between the two analyses based on prototypicality, there is not enough evidence provided within the publication to provide reliable interpretation of the data.

Greasley and Lamont (2011)	
○	To help me concentrate/think
○	To distract me
○	To help me relax
○	To help me carry out/enhance the activity I was doing
○	To create the right atmosphere
○	To bring back certain memories
○	To create an emotion/mood
○	To accentuate an emotion/mood
○	To change an existing emotion/mood
○	Because I really like listening to it
○	Because I thought the person(s) I was with would like it
○	To help me pass the time
○	To help me feel less alone
○	To listen to the lyrics
○	Out of habit

Figure 10 Greasley and Lamont’s (2011) functions of music

The most notable contribution of Greasley and Lamont’s research is the functions of music they identified from participants (Figure 10). They identified 15 functions of music from the ESM data (Greasley and Lamont, 2011, p. 59). This list represents the largest list of functions thus far in this review. Many functions also reinforce those previously identified in both theoretical and experimental studies. The memory related function can be seen in

Sloboda’s 2005 analysis of the MOP dataset, mood/emotion related functions are found in several previously reviewed taxonomies, those related to taste or aesthetics are particularly common in theoretically defined frameworks (those without experimental data), and relaxation functions are also common in previously reviewed taxonomies. However, this publication introduces new functions: “distraction” and “concentration” functions are novel in this review,

having not been identified by previous researchers. “Atmosphere creation” functions had not been previously identified and yet appears quite frequently from hereon in other research publications. Another noteworthy function related to external pressures “because I thought the person(s) I was with would like it”. Finally, the “to help me feel less alone” represents a hitherto unidentified function of music.

Greasley and Lamont identified several groups of listeners within their study, based on their level of engagement with music listening. Three findings are particularly striking with respect to functions and engagement. Firstly, the less engaged group used music “to help me carry out/enhance the activity I was doing” was distinctly lower in the less engaged group (2.5%) compared to moderately engaged (14.5%) or most engaged groups (9.7%). Secondly, the “atmosphere creation” was more than three times more frequent in the most engaged group than others. Thirdly, whilst “create an emotion/mood” was practiced by all engagement groups, “accentuate an emotion/mood” was only employed by moderate and most engaged, and “change an existing emotion/mood” only occurred in the most engaged listeners. This final finding resonates strongly with van Goethem’s suggestion that emotional self-regulatory listening is a tactic that individuals can learn to greater improve the efficacy of their listening (van Goethem, 2010, p. 300), furthering the importance of rehearsal and awareness and their impact on effective music-facilitated goal attainment. It would stand to reason that only the most engaged listener would have learned this particular functional behaviour, reflected in the findings of Greasley and Lamont presented here.

Whilst the other findings are useful for project, the most salient point from the research is the revelation that highly engaged listeners are more aware of why they are engaging in musical behaviours than less engaged listeners (this effect is partially, although not entirely, ascribed to participation in the study). This is reinforced by DeNora (2000, p. 49) stating that listeners “act as discjockeys to themselves” with a particular goal in mind, rather than simply following an unconsidered whim when selecting music. This is further supported by Lonsdale and North (2011, p. 120) who reported participants using music to specifically regulate their arousal throughout the day depending on particular demands or goals inherent in a given situation. It appears that, to some degree, listeners can be aware of their use of music to achieve situational goals in everyday life.

In addition to the functions of music, Greasley and Lamont also report the effects of the underlying rationale of listening. However, rather than considering this as a list of effects, it would be better viewed as an analysis of the efficacy of each functional listening choice. Rather than using phrases such as “energising” as have been suggested by other researchers (see van Goethem, 2010), the findings presented in Greasley and Lamont (2011) relate directly to previously identified functions i.e. the function “to help me concentrate/think” relates to the effect “helped me concentrate/think”. The addition of two additional effect categories should, however, be noted. The analysis also includes “had little or no effect” and “annoyed/irritated me”. However, the authors do not correlate functions to their effects. This could have proved valuable insight but is, unfortunately, missing from the publication. Inference and theoretical connections can only elucidate so much, and without an evidential basis on which to build such inferences, further hypotheses would be remiss.

Although Greasley and Lamont’s analysis lacks interpretation from some perspectives, they do present experimental evidence to support the finding that “people choose to listen to music to fulfil different functions simultaneously” (Greasley and Lamont, 2011, p. 63). Greasley and Lamont found that, per listening episode, participants selected an average of three reasons to engage in music (functions). Theoretically, some functions may be incompatible, such as accentuating an emotion/mood and changing an emotion/mood. Conversely, some functions may be complementary, such as distraction and relaxation functions. However, there is no correlation presented within the original publication and this is merely conjecture. With this one finding, the complexities of exploring music’s function behaviours have increased by a factor of three. Just as music itself is a combination of entertainment, communication, passion and the ephemeral (Kusek and Leonhard, 2005, p. 37), Greasley and Lamont’s findings suggest that listening behaviours are equally nuanced and layered. We often employ music for fulfil various different functions simultaneously, stretching across the various broad domains of function. The various disciplinary perspectives available, and the studies discussed here, do not shed any light on the potential reality that multiple functions of music are being exploited in a single listening experience.

3.4.6 Sloboda, Lamont and Greasley's Functional Niches

In 2012, Sloboda, Lamont and Greasley come together to synthesise their previous research into something that could be considered holistic with regards to everyday music. The researchers present an alternative to typical taxonomies of function; the potential areas of use are divided into six “functional niches” (i.e. comparable with contextual variables) with four potential functions underpinning the use of music in any one of these niches (Figure 11). Whilst the relationship between the two is still relatively open within this review, there now exists a potential route of interactivity between each area. The language used within the paper is also worthy of note as the possible functions are simplified to further connect to concepts of goal orientation on the part of the listener.

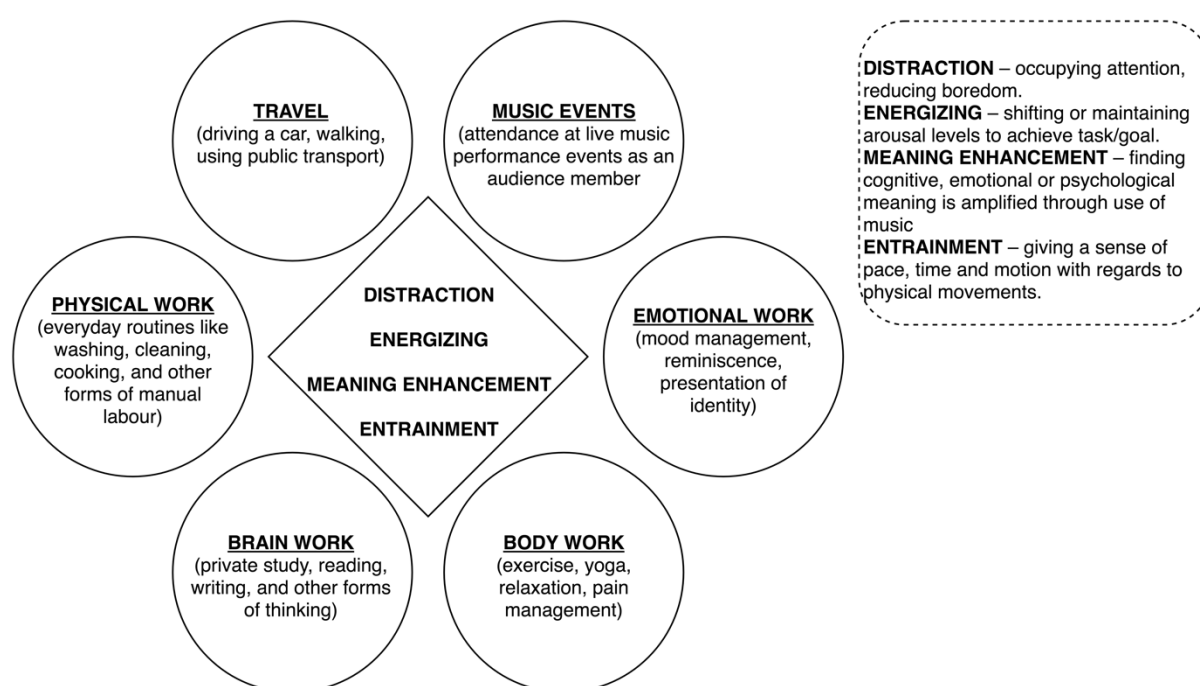


Figure 11 Proposed visualisation of Sloboda, Lamont and Greasley's (2011) 'functional niches'

A growing number of varying functions have been identified by researchers and explored throughout this review. Therefore, whether it is possible to reduce functions down to four one-dimensional options should be questioned. To approach this issue, we must embrace the dissonance between the framework presented here and Merriam's original descriptions. The framework presented here by Sloboda, Lamont and Greasley offers a new approach to the notion of functions (2011, p. 431). If we accept the functional niches as *functions* in a traditional sense, we can then perceive the four functions (distraction, energising, entrainment, and meaning enhancement) as directional imperatives acting upon functions. In a similar manner to Russell's circumplex model of emotion (see Russell, 1980), we can conceptualise

these four functions as directing aspects of the listening behaviour. For example, in the instance of “walking” within the “travel” niche, we can employ each function separately. *Distraction* may help us to ignore the long uphill walk, *energising* may give us that extra incentive to get home quicker, *entrainment* might help one keep a regular pace, or *meaning enhancement* may help us notice aspects of our surroundings or give the walk a greater personal meaning. However, some functional niches and functional directives may be incompatible, i.e. it may be difficult to *energise* (reducing arousal) for *relaxation* and yet employ *entrainment* in a physical task.

The framework presented within Sloboda, Lamont and Greasley (2012) presents the functions of music in a manner that is compatible with a 2-dimensional conceptualisation (although this is not stated outright, and it does not expressly allow for gradations or movement between positions). However, this framework does not readily sit within Merriam’s original definition, rather offering an alternative conceptualisation of functions and categorisation of contexts. Yet, the research also suggests some notions that may well be functions in the traditional sense. “Pain management” has not yet been discussed in this review and is often ignored by many functions researchers, and here is presented as akin to an activity one engages in.

Unusually, given this publication presents work from Sloboda, Lamont and Greasley, much of the previous research and definitions appear to have been superseded. Sloboda’s activity groupings, and Greasley and Lamont’s contextual groupings are not presented here as would be expected. Rather, these groupings appear to have been reconfigured into the broader functional niches. Although this may somewhat reduce the granularity of both activities and locations, it may allow for broader categorisation of functions, and foreshadows the need for interdisciplinarity (e.g. psychology, sociology, or phenomenology) to create a more holistic taxonomy of the functions of music.

3.4.7 Bull’s and Williams’ Portable Functions

Given the refocusing of the Reciprocal Feedback Model’s goal to articulate listening performed to recorded material (as well as live), the final publication of function worthy of discussion here is the work of Andrew Williams (based on the work of Michael Bull). Here, we may identify a differing view of the functions of music, and something that increasingly more individuals may perceive as an accurate representation of listening in everyday life. Bull (2000) presented an analysis and potential taxonomy of musical function rooted in the use of portable music devices (in Bull’s case, the Walkman and personal stereos). Bull’s analysis concerned the Walkman as

a tool for “management of space, time, cognition and interpersonal behaviour” (Bull, 2000, p. 2), and the potential for the technology to migrate away from urban spaces, and to accompany a vast range of activities. While the work of previous researchers presented above does imply the existence of portable music devices (particularly in those that reference “travel” as an activity), Bull’s analysis was grounded almost entirely in notions of the portable technological augmented listening that Walkmans and cassettes. offered.

Williams (2006)	
○	Chosen Sounds – Listeners simply enjoy the experience of certain musical materials or know what they desire to hear at that moment.
○	Learning – Williams cites examples of music students listening to music in an attempt to learn aspects of the music materials: phraseology, intonation, performance, tempo etc.
○	Aestheticisation – Music can become a personal soundtrack to everyday life for listeners: they become passive watching the world unfold before them to an elected soundtrack as might occur within a film.
○	Environmental Control – “Listeners use portable music to replace external sounds they consider unpleasant” (ibid., p. 28).
○	Boundary Demarcation – Music to block or filter aspects of the listeners physical and sonic environment. Headphones “remove them from unpleasant environments” (ibid., p. 41) and thus allows them to feel removed from the situation or context in which they currently inhabit.
○	Interpersonal Mediation – Allowing music to replace the everyday sonic environment can also alter or augment interactions between individuals. Individuals can actively block aural calls for attention from others,, it alters the attentional focus of the listener towards the music and away from everyday life, and acts as a signal to non-listeners that interaction is not desired. Headphones are an outward sign of internal separation.
○	Company – Music can become a replacement for human contact. It acts as a proxy or an interactive source with which to engage. Music can act to “assuage loneliness” (ibid., p. 73).
○	Aural Mnemonic – Music is capable of allowing listeners to reminisce about times past and as an aide-memoire.
○	Mood Management – Music is capable of performing many different mood-related tasks: improving, calming, catharsis etc.
○	Time Management – Using music to give ‘wasted time’ or mundane events greater meaning and value by the inclusion of music. Listeners believe their time is of more value with the addition of musical materials.
○	Activation – Music can provide an energising stimulus for exercise or physical activities through tempo and rhythm. It can catalyse movement and inspire greater stamina or effort on the part of the listener.

Figure 12 William’s (2006) functions of portable music

Cassette technology has been superseded by numerous developments (CD, minidisc, and the ever-ubiquitous MP3 format) (Huisman, 2006). Here, Williams’ re-analysis of Bull’s original work incorporates the shift in devices, and the potential freedoms such developments may have furthered. Williams’ list directly mimics Bull’s (both having 11 discrete functions). However, as Williams writes at the outset of his publication that “Bull concentrates exclusively on the Walkman, to the neglect of the music that Walkman users choose to hear” (Williams, 2006, p. 3), hence Williams elects to use Bull’s outputs “to analyse the functions of portable music” (ibid.) in broader terms, rather than the functions of portable cassette players.

Given this taxonomy only exists as a result of ethnographic study of individuals' use of portable music, it is more appropriate to group the work with that of Greasley and Lamont, and John Sloboda (those using ESM-style methodologies), than the theoretical work of Merriam. The work is predicated on individuals existing and interacting in real-world contexts with and through music. Hence, it may be that the functions presented in Bull's and Williams' research do not or cannot occur in non-portable contexts i.e. the home or in concert halls. The act of personal, private listening may be one that allows certain musical functions to occur at the exclusion of others. Williams presents 11 functions (ibid., pp. 4-7) (Figure 12).

Bull's and Williams' work presented here offers an additional lens through which to gain insight into musical functions in everyday life, by using the practicalities of technology to ground the work. However, at the time of writing Williams' taxonomy was considered contemporary and valid but has quickly passed beneath the same shadow as Bull's work; a shadow cast by ever-evolving technological developments in portable listening. The cloud, instant access, and music recommendation systems may have further changed or increased the functions of portable music. However, there is, as yet, no way to know what these functions may be as an analysis like Williams', using Bull's original framework, has not been conducted on listeners since the arrival of such new listening devices. Bull's analysis was only seven years old when Williams announced its content outdated, and Williams' publication is now already over a decade old. It begs the question: are there functions that have not been identified and codified?

3.5 Reciprocal Feedback Model 3rd Iteration

The preceding review has shown that the functions of music provide an appropriate and compelling alternative to the *response* component still present within the previous iteration of the Reciprocal Feedback Model. The *response* component was deemed too limiting a concept to facilitate all aspects of music-facilitated goal attainment listening (with response grounded primarily in regulatory theory). However, the functions of music offer the ability to not only encompass regulatory theory, but to also present the two-fold benefit of both defining the 'reason' for listening but also the course of action taken or desired effect of the listening episode. Hence, replacing the notion of *response* with the functions of music not only offers further specificity of the reason and desired outcome, but also reinforces the role of goal orientation in utilitarian listening and elevates the relevance of contextual considerations by bringing with it the concept of the 'use' of music as proposed by Merriam.

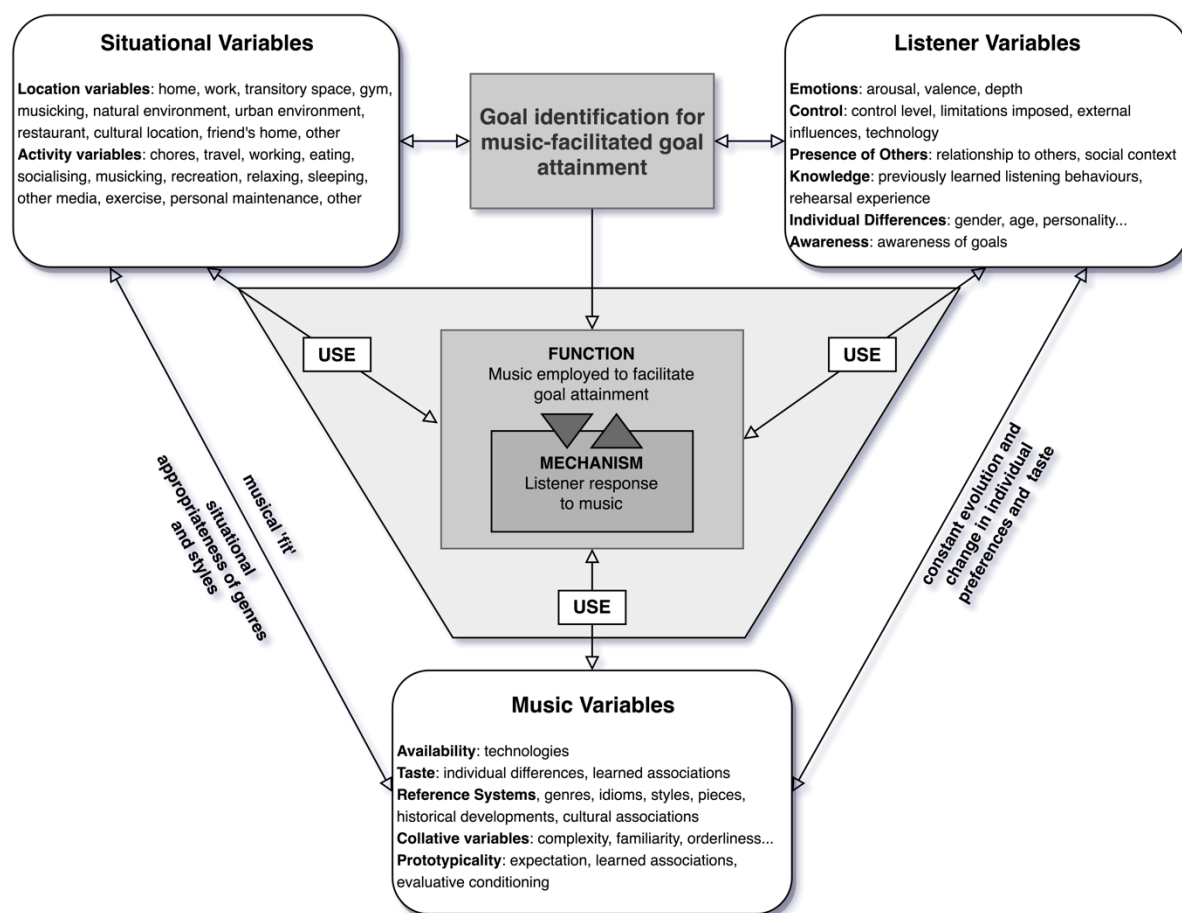


Figure 13 3rd iteration of Reciprocal Feedback Model including the functions of music and mechanism of effect

The 3rd iteration of the Reciprocal Feedback Model (Figure 13) has been further augmented to replace the *response* component with a more consistent view of music's functionality for listeners. In doing so, the model now makes plain other associated concepts; *use* is now clearly occurring within the confines of the contextual triad, and the mechanism of effect (see Juslin, 2012). The three hierarchical levels of use, function, and mechanism are now represented as occurring within the model. Use exists where the functions of music interact with the contextual triad and the outside world; the functions of music are conceptualised occurring and interacting the larger considerations of use; and within the depiction of functions, the mechanism of effect is shown as interacting in a bi-directional manner with functions. The new iteration now also highlights the bi-directional relationships occurring between the hierarchical levels of use, function and mechanism.

With the additions made to the Reciprocal Feedback Model, the model can now accurately account for music-facilitated goal attainment listening. The model lacks the specificity that

would inform each possible variable included but serves to demonstrate the processes in play during any listening episode. The Reciprocal Feedback Model has been revised over the course of this theory review, moving away from a focus on live music situations and audience-performer interaction, replacing it with a system that appreciates the majority of today's musical engagements are via recorded music and individualistic. The refinements have also filtered and increased the prominence of some of the variables within the contextual triad. Finally, the model has been refocused to situate the axiomatic notion that listeners "have goals and purposes, manifest or latent, which music engagement fulfils" (Sloboda, O'Neill and Ivaldi, 2001, p. 11) as the central guiding principle; this was done by placing functions as both the reason for listening, and the desired outcome.

3.6 Developing Functions: A Summary

This chapter has shown an alternative conception of music listening as grounded in social context rather than focusing on regulatory perspectives and has shown that the functions of music, as a distinct but interrelated concept with the uses of music, are capable of describing and fulfilling the needs stemming from music-facilitated goal attainment. The concept of function can express both the underlying rationale or reason for listening but also expresses the desired outcome of the listening episode. Function is heavily informed by contextual considerations (which can be considered analogous with the concept of use) and can be employed to perform various different tasks depending on the situational demands. Merriam's original work provides a point of differentiation when exploring the possible impacts music can have on us. Indeed, until the introduction of Merriam's theoretical framework in this chapter, the term "function" has not been employed in this thesis to avoid conflation between the two terms. As such, it is possible to define the two terms as distinct yet highly connected concepts (Objective 3)

The use of music concerns its context. It is the locale, activity, situation, or context in which music listening occurs. Gregory's examination of use provides some examples of contexts where context can easily be identified or expressed. It is useful to consider use as being an articulation of the wider perspective of music listening that the contextual triad offers, in that it embodies the variables that combine to create context. Although this thesis does not explicitly explore the 'uses' of music, the influence of music use and the contextual triad can be seen in many of the discussions and the studies presented later in the thesis. The functions of music concern the "reason" for music listening (Merriam, 1964, p. 210). Alternative terminology may

be ‘driver’, ‘rationale’, or ‘goal’. Whereas *use* embodies the contextual triad and its component variables, *function* embodies and expresses the goal-orientated behaviours of the listener. The functions of music encompass both what we desire music to do for us and the outcomes of our listening. As such, this thesis suggests that function (and functionality) is the directive component of the listening process.

This chapter has reviewed the key developments in the study of the functions of music since Merriam’s inception of the concept in 1964. The work presented a chronological review of the salient pieces of research and proposed another refinement to the Reciprocal Feedback Model by replacing the concept of ‘response’ with that of ‘function’ to best express goal-orientated listening. Whilst these use and function exist in a reciprocal arrangement, the two are distinct. Yet, it is likely one cannot exist without the other as we do not listen beyond a context, and there is no context without an inherent goal. Therefore, the functions of music represent an alternative to ‘response’ in the Reciprocal Feedback Model. A third iteration of the model was developed employing the functions of music to replace the *response* component, further developing the theoretical model of interactions between the contextual triad and goal orientation (Objective 2).

With an understanding of the role of contextual variables and an iterative model of goal orientation developed over the course of the thesis thus far, it is now possible to draw this theory together and begin to address the core question this research wishes to approach. How should we conceptualise how listeners use music in everyday life to aid in contextually-rooted goals? With a significant body of research into the functions of music and wider music-facilitated goal attainment processes identified and reviewed, where are the moments of resonance within the research? Most importantly, how can such a consensus even be constructed? With the theory established over the course of the framing and literature review, the thesis now begins to perform novel primary research. This research will firstly address the problem of consensus across research into the functions of music, and will create and describe a consensus taxonomy of the functions of music in everyday life (Objective 4).

4.1 Study 1: Aggregate Thematic Functions Framework

They say the next big thing is here
That the revolution's near
But to me it seems quite clear
That it's all just a little bit of history repeating
- *The Propellerheads "History Repeating" (1998)*

There is no one approach to the functions of music that is considered by researchers as somehow complete. Music-facilitated goal attainment presents a field of valid and reliable research, but with no consensus from which individual researchers operate. Researchers have no exhaustive consensus of the area that combines all the relevant research together and expresses itself from a singular theoretical position. Given this, one key question remains: how might a consensus be achieved?

To properly articulate this question, we must examine some of the issues raised by the previous chapter. The primary problem concerns the presentation of each research publication. The manner in which researchers present their material varies widely, from lists, to heavily descriptive discussions, to compartmentalised or factorised models, to a 2-dimensional layout. How comparable are the various findings of each publication? Clearly, some form of descriptive or qualitative component is required, as the core aim of this thesis is to develop an understanding of goal-orientated listening. Furthermore, a reduction or grouping of the functions of music presented is likely desirable, thus reducing redundancy and repetition. Of paramount importance is maintaining a focus on presenting the outcome as something inherently useful, and offering a consensus that can cut across the various different strands of functions research.

4.2 The Problem of Consensus

The current state of the functions of music corpus is one that is disparate, confused, and in some regards, even contradictory. We find ourselves confronted by a field that is fragmented and in some conceptual disarray. Four key issues plague the study of the functions of music. The first of these issues is that Merriam's initial founding definitions are often ignored. Researchers rarely state their definition of the functions of music to which their work adheres, preferring instead to illuminate the individual functions that were identified in their theory or study, with little regard for *how* they were initially identified. As such, researchers often include

many items that may be considered inappropriate or even controversial by other researchers. Often researchers include references to aesthetic judgements of musical features as functions of music. Others have included descriptive statements about emotions as functions of music within their findings. Clearly, this muddies the waters of investigation for those subscribing to a particular definition of the functions of music. It also brings into question the very notion of a unified field of research if we lack a standard definition or lexicon from which to work.

Secondly, there is no systematised approach by which to investigate the phenomenon. Several researchers have offered investigatory methodologies such as experience sampling studies, which boast longitudinal measurement and strong ecological validity. Sloboda's use of the mass observation project data also possesses strong ecological validity. Conversely, other researchers elect to explore the phenomena from a purely theoretical perspective. Perhaps most concerning are those who merely provide alterations of the work of those before them with little or no novel data employed to make such changes. These points are not intended to suggest that theoretical rather than experimental approaches are the most appropriate manner in which to explore the phenomena, but without participating in a dialogue with actionable outcomes, there can be no unified approach to the study of the functions of music. How should the functions of music be investigated? The lack of accord concerning the definition of the functions of music further compounds this issue i.e. without functions defined it may not be possible to construct an interrogative instrument. There is the possibility of a fruitful seam of exploration here, but sporadic study and disparate approaches are obfuscating the work already performed.

The third issue facing the functions of music is the most obvious upon reading the previous chapter. Numerous studies present vastly varying findings and conclusions, with few congruent features running through all publications. However, this research makes up the essential corpus of the functions literature and still presents the most accurate picture of the field available to us. Yet, with so many apparent 'definitions' and approaches to the field of study employed across the core literature, we find ourselves in a bewildering position: there is no working consensus as to what the functions of music might be. Indeed, although many functions of music may have been identified, there is no agreement as to where the delineation between them lies, what role each function performs for us, how best to describe them, and even how best to refer to them. Without a working definition to allow us to parse possible functions, our current understanding of functions may be established on a continually shifting foundation.

The final issue the field faces is that of cross-disciplinarity. Much of the current research into the functions of music is situated in music psychology, but this is not always the case. Merriam's work sits firmly rooted within cultural anthropology or ethnomusicology¹². As is clear from the previous review, and the forthcoming analysis, many researchers have proposed many different functions of music from many different disciplinary perspectives: music psychology, musicology, sociology, sports sciences, neuroscience, philosophy, and phenomenology. Does such variety in disciplinary approaches infer these disciplines or domains should be somehow incorporated into the study of the functions of music? Moreover, would it therefore be appropriate to explore the functions of music from an interdisciplinary perspective rather than strictly situating all research within music psychology and the associated investigatory constraints it brings with it?

Although it is possible to identify a body of material that is relevant to the question of the functions of music, including those studies explored previously, the functions literature does not represent one singular domain of study. Merriam's work is grounded in ethnomusicology, Hargreaves and North in sociology and the social aspects of music, DeNora explicitly includes a much-needed feminist perspective within her work (to redress the balance within research practice), Greasley, Lamont, and Sloboda sit more comfortably within music psychology, and Bull and Williams are again situated in sociology. With this wide array of disciplines, problems present themselves regarding aims and interpretation. It may be possible to observe certain functions from one perspective with a lack of appreciation for the wider nature of the subject i.e. it may be possible to observe emotional effects of music and perceive them as physical ones, depending on the perspective and discipline of the researcher.

These four key issues do not stem from the subject, but rather the approaches of investigators and the wider research community. These issues are iatrogenic rather than intrinsic, and as such can be mediated by altering attitudes in the research community. However, remedial work is also required to adjust previously conducted research if such attitudinal shifts are to take place. Herein lies the crux of this discussion: how can these issues be overcome? Moreover, can previously conducted research be brought into alignment thus forcing a pseudo-consensus

¹² Although it can certainly be argued the field of music psychology was not the recognisable discipline it is today at the time of Merriam's work.

upon research already performed? In simplistic terms, can the extant research be systematised to present a unified field of research?

4.3 Previous Aggregate Analysis

Whilst a consensus has yet to be achieved between researchers across the disciplines of musicology, music psychology, music sociology and the disciplines associated with the functions of music, some attempts have been made to compile multi-disciplinary lists of functions. Schäfer *et al.* (2013) compiled a list of 22 different publications that suggested musical functions. This list, while extensive, is by no means exhaustive, and is at the time of this research, already out-dated. Within the list are publications from many different disciplines, and a distinct lack of parity is noticeable between the various studies. Schäfer *et al.* also point to various other collections of studies that have been assembled and with each new exploration of the subject the list of potential functions grows.

The lack of coherence and parity between the various studies is perhaps somewhat symptomatic of music psychology's placement as a multi-disciplinary area and the possibility that musical behaviours may not be functionally coherent (Hargreaves and North 1997, p. 3). However, the apparent lack of consistency in how listeners employ music could also be due to multiple functions occurring in parallel, but with different emphasis or importance for the listener (Heye and Lamont, 2010, p. 114). Finally, the lack of parity could also be blamed on a lack of overall agreement as to the scope of possible investigation regarding the functions of listening (a problem likely stemming from issues with definition). It is common to see different terms, groupings and definitions of these functions and without a consistent, research community-wide approach it is likely to continue in this manner until some consensus can be achieved. The lack of parity between the numerous studies presents an issue when exploring the functions of music.

By treating the body of available studies as one discreet dataset it is possible to identify, analyse and report themes within the research (Braun and Clarke, 2006), and compartmentalise the reported functions from multiple perspectives and disciplines. Although the very nature of qualitative research and analysis is “inescapably iterative” (Haussler, 2008, p. xv) and requires constant reappraisal, it is expected that an analysis such as this will illuminate resonances across disciplines, and further strengthen the overall body by presenting the consistencies within the

research regardless of the investigatory methodologies or interpretations of the primary researchers.

Schäfer *et al.*'s (2013) analysis provides an interesting, if not somewhat simplistic, template from which to extrapolate. The included studies are not exhaustive, and in addition to this no attempt is made to highlight resonances or correlations between the findings of the included studies. The analysis does provide a body of studies upon which to expand and highlights the appropriate functional domains for each study. The analysis "identified more than 500 items concerned with musical use or function" (Schäfer *et al.*, 2013), categorised into 129 distinct items. Unfortunately, the publication is not forthcoming with an exact number of pre-categorised items and does not differentiate between uses and functions.

Within all of the available functions compiled by Schäfer *et al.* (2013), and all of the available research in the various possible disciplines and sub-disciplines thus far, it is possible to group functions into larger groups or domains, namely: cognitive, emotional, and social functions (Hargreaves and North, 1999). Others have suggested that these groupings are overly simplistic, and should include features such as arousal/energising, and cultural functions (Tekman, Boer and Fischer, 2011). Yet, as pointed out by Boer (2009) the line between social and cultural is, in this instance, essentially an arbitrary distinction with no real merit, as culture is symptomatic of, and an extension of, societal function. Even within the sociologically-focused studies of music function it is possible to delineate between individualistic uses of music for a societal function, and wider functions relating to group dynamics. It is suggested that these two positions are not a homogenous mass, but rather distinct categories that, whilst being interrelated, do serve broadly differing goals.

Schäfer *et al.*'s (2013) aggregated collection of functions suggest social, emotional, and cognitive domains in line with Hargreaves and North (1999) but also suggest the inclusion of physiological features as a grouping in their own right. Further evidence to support this claim shows that the most common listening functions are related to the development of self-awareness, social relatedness, arousal, and mood regulatory functions (Sloboda, O'Neill and Ivaldi, 2001; Schäfer *et al.*, 2013). There is a definite distinction between arousal and mood regulation, even though there is a strong connection between the two. Arousal also has strong implications for physiological change and expression. Furthermore, some studies explore a psychological domain as an alternative to a labelling of cognitive functions.

Given the inherent issues with a) individual models of music function, b) the lack of parity across the various disciplines of listening studies, and c) the notable shortcomings of Schäfer *et al.*'s study, I believe constructing a larger aggregative taxonomic framework compartmentalised into broad groupings or domains of music's function is the most prudent course of action. Combining the insights offered from different disciplines on the subject of music functionality may allow for the widest possible conception of the subject, providing both depth and breadth in its content. If musical function can be understood from an interdisciplinary perspective, it may further illuminate how we employ music's functions to achieve specific contextually driven goals.

Moving forward this thesis retains its position as interdisciplinary, employs a pragmatist epistemological approach, and adheres to the established definitions of Merriam. As such, this approach should mediate the issues outlined by stating at the outset; the definitions of the uses and functions of music, and use whichever investigatory approaches are most appropriate to uncovering the functions of music. With such approaches defined before the study begins, the issues present in Schäfer *et al.*'s analysis (such as those concerning definition and a lack of integrated analysis) should not be encountered.

4.4 Study Design

The following study addresses the rich body of research literature with a view to forming a pseudo-consensus of all the pertinent research into the functions of music. The research performs a large-scale bibliometric study, taking the form of a qualitative thematic analysis that expresses contextualised music-facilitated goal attainment through the functions of music. The results of the analysis are presented as a visualisation, drawing all the available research together to form a cohesive and theoretically grounded taxonomic framework of the functions of music. This taxonomy also represents a pseudo-consensus constructed from previous studies of the functions of music. Beginning with a descriptive outline of the methodology and analysis of the studies used in the thematic analysis, each function of music is discussed with reference to the relevant source research and parses the meaning and possible applications of such functions. The framework is discussed on a wider, macro level, that groups and compartmentalises the findings into a broader categorisation of function.

4.4.1 Literature Search Procedure

The search for salient literature was conducted using electronic academic databases. Using multiple keywords, the aim was to gather the broadest range of possible literature dealing with the functions of music. Keywords included: function, music, use, regulation, strategy, listening. The term *use* was specifically included to overcome the misidentification of function by many researchers. The disciplines from which results came were not limited. There were no date restrictions placed on the search. Results were then manually filtered to those that presented novel studies of function based on primary research, and to papers that presented augmentations of previous work. Papers that faithfully replicated the work of prior research were excluded to remove redundancy. 52 papers were identified and included within the analysis. A list of publications used in the bibliometric analysis is available on request. The coding processes was performed in NVivo 11, with additional visualisations of the data created in Tableau and Draw.io to allow for accessibility.

4.4.2 Thematic Analysis: Design and Procedure

Performing a meta-analysis on the sources identified in the literature search presents several issues concerning consistency, rigour, replicability, and credibility. The theoretical sources are rarely forthcoming as it pertains to defining their methods for identification and definition of certain functions, and qualitative studies are restricted to interpretivist paradigms and expressions of their data, grounded in the temporal, geographical and demographical loci of their studies. Other sources reliant on real-world evidence and factor analysis work from differing populations, demographics, and acutely encapsulate all the issues that plague quantitative meta-analyses. Conducting a meta-analysis on sources that cover theoretical, qualitative and quantitative data increases the difficulties present in such analyses. As such, ‘typical’ statistical approaches to a meta-analysis are simply incompatible with constructing a pseudo-consensus. Furthermore, to focus on only the quantitative measures of functions would severely limit the depth of exploration and explanation one could gain from a meta-analysis.

However, rather than relying on a set of statistical techniques that would form a typical meta-analysis, an alternative approach to such rich and varied data sources is required. As such, “a method for identifying, analysing and reporting patterns (themes)” within varied data is needed

(Braun and Clarke, 2006, p. 79). Braun and Clarke's¹³ proposed version of reflexive thematic analysis offers such a method as it "seek(s) to describe patterns across qualitative data" (2006, p. 80). Although explicitly applicable to qualitative data, it is feasible that the factor 'labels' that are defined through either factor analyses or principle component analyses can be scrutinised through the lens of thematic analysis, and the papers exposition of such factors would certainly constitute qualitative data. Clarke and Braun (2017, p. 297) propose that thematic analysis can be applied across a range of possible research paradigms. The flexibility embedded within the notion of thematic analysis as an approach to such varied data would appear to at the very least bring the data together across methodological boundaries.

Thematic analysis' primary mode of action allows data to be coded, and codes can then be combined together to create larger themes. Codes can be created, identified, constructed, split, re-coded, or changed as the data and researcher determines (Terry *et al.*, 2017, p. 25). Such codes can then be combined, split, grouped or segregated into broader themes that encompass 'similar' concepts identified in the data (ibid. p. 34). Braun and Clarke state that such research must operate in differing epistemological positions determined in part by the data and by the goal of the research (Braun and Clarke, 2018). These are conceptualised as a series of continua rather than polar positions, and the authors appreciate and fully expect researcher to reposition themselves along these continua in a reflexive manner, as the data determines. Considerations of investigatory paradigms (inductive < > deductive); the study's orientation to the data (experiential < > critical); and epistemological positioning (realist < > constructionist) should all be considered when approaching thematic analysis. Furthermore, the researchers suggest a range of differing approaches to coding that can be taken depending on these continua, and on the presentation of the data.

As such, thematic analysis requires active and participatory input from the researcher (Braun and Clarke, 2006, p. 98). Developing and defining codes and consequent themes is therefore potentially fraught with confirmation bias and experimenter bias. The question of replicability and rigour in thematic analysis is therefore of utmost importance (Roberts, Dowell and Nie, 2019). There are other issues subsumed within this question; most clearly that the processes of other researchers in the possible source material omit their coding and definition

¹³ Braun and Clarke are the most prolific and cited researchers into thematic analysis. Their work shall be preferred here as it provides the most well-defined and robust approach to thematic analysis.

methodologies from their publications (ibid. p. 1). As thematic coding requires not only engagement from the researcher, but also active decision-making processes, general criticisms of the approach argue that the tool is far too subjective and can falsely amplify aspects of the data. How then, might one maintain transparency and rigour in a process that might appear to rely entirely on the opinion of the researcher?

Coding the Dataset

Given these concerns and the format of the data, a strict procedure for the thematic analysis must be established that can reduce in the impact of such subjective interpretations. Within their methodology, Braun and Clarke (2018) offer several possible coding orientations a researcher may take when approaching the data, and this should be tailored to the aim of the study and the data. This study aims to identify equivalent or analogous functions across the dataset to construct an exhaustive list of functions present in the data. The data, although incredibly varied in methodology, all present a list of functions of music, and most (although not all) present descriptions of each function (some detailed, some cursory). From this simple description of aims and data, it is possible to define the position of the research on the proposed continua, and therefore define an approach to coding. Firstly, the nature of the investigatory paradigm here can only be an inductive one; the study aims to explore the data identifying equivalent functions rather than examining the data for functional categories that are already pre-defined, as would be the case in a deductive paradigm. Secondly, the variation inherent within the data, formats, sources etc. suggests that the second proposed continuum (orientation to the data) position will likely flex and shift in response to the data. However, remaining critical as it pertains to descriptions of each function will be considered paramount in this study, as it will allow for comparisons and incompatibility to be identified and explored in each function. Thirdly, the study (and the majority of functions research) is predicated on the notion that functions are both knowable and exist consistently within the social world. As such, the study will be positioned firmly within a critical realist epistemology. Given these features of the study and the data, the possible orientations of the coding methodology reveal themselves.

Although the data here should be coded inductively i.e. exploratory and reliant on the data rather than any pre-defined group of functions, that does not suggest how to engage with the data to limit overly subjective responses to the data. Within their methodology, Braun and Clarke (n.d.) propose a ‘semantic’ coding methodology, whereby coding “reflect(s) the explicit

content of the data”. In this instance, the coding is reliant almost entirely on surface level language. This can be narrowed even further to words, phrases and semantically coherent language (such as synonyms and reversed antonyms). As such, using semantic coding in the first instance allows for a reduction of the researcher’s subjectivities within the coding process.

Thankfully, semantic coding ameliorates some of the issues that are inherent in active coding. The biases of the researcher can be somewhat minimised by placing initial emphasis on language. Using semantic coherence (identical words, differing tenses), synonyms and antonyms (for reversed items) it is possible to code the functions across the theoretical, qualitative and quantitative publications that make up the dataset. As such, beginning with the “explicit content” of the data will minimise initial researcher bias. There are, of course, some potentially compounding issues here, particularly the concept of an internalised theory of language on the part of the researcher, but by limiting initial semantic coding to semantically coherent words, synonyms and antonyms, this should also be minimised.

Example: Semantic Coding for ‘Relaxation’ & ‘Relieve Boredom’ Functions

This short example demonstrates semantic coding performed on three different publications within the dataset. The studies have been selected to include an example of theoretical, quantitative and qualitative methods studies.

Study A	Study B	Study C
Memory	To relax	To relieve boredom
Relieve boredom	To pass the time	To reduce loneliness
Relieve loneliness	Music could not be avoided	To relieve tension/stress
Relaxing	To get some company	To be trendy/cool
[list continues...]	[list continues...]	[list continues...]

Both study A and B use grammatical variations on the term ‘relaxation’, and would be coded together (in this instance using the label ‘relaxation’). Furthermore, in study C it is possible to view ‘to relieve tension/stress’ as a synonym of relaxation and would be coded under the same relaxation label.

This short sample of the dataset also possible to view both study A and C referring to ‘relieving boredom’. These would be coded under a new semantic code (possibly ‘relieve boredom’).

However, semantic coding only allows for a ‘first pass’ of the dataset, and codes only those functions that are clearly and semantically equivalent. Functions that do not express their content ‘explicitly’ (Braun and Clarke, n.d.) require further exploration. Braun and Clarke suggest that semantic coding occupies one side of a continuum, with its counterpart ‘latent’ coding positioned oppositely. Latent coding concerns the “concepts and assumptions

underpinning the data” rather than the explicit content or words used. Those functions that were not coded directly through semantic coding can be coded through latent rather than semantic coding. Latent codes capture “implicit” rather than “surface” meaning (Braun and Clarke, 2018), and shed light on the deeper meaning behind the data. However, this is not to say that the researcher’s interpretation of the underlying meaning is entirely arbitrary. Rather, the coding simply goes beyond the surface semantics of the text provided in function names within the various studies. Latent coding perspectives allow the researcher to delve into the deeper detail of each function and engage with its description. Clearly, latent coding is more susceptible to the internal biases of the researcher; this is why semantic coding must be completed before latent coding can begin.

Example: Latent Coding for ‘Relieve Boredom’ and ‘Company’ Functions

This short example demonstrates latent coding performed on three different publications within the dataset (used in the previous example).

Study A	Study B	Study C
Memory	To relax	To relieve boredom
Relieve boredom	To pass the time	To reduce loneliness
Relieve loneliness	Music could not be avoided	To relieve tension/stress
Relaxing	To get some company	To be trendy/cool
[list continues...]	[list continues...]	[list continues...]

In study A and C both discuss the reduction of loneliness (and would have been coded semantic together). However, study B also includes the reference ‘to get some company’. Latent coding approaches would consider the underlying explanation of the function in the original publication and infer that the role of this function is to make the individual feel less lonely.

In the previous example both study A and C were semantically coded to ‘relieve boredom’. Additionally, using latent coding it *may* also possible to include study B’s ‘to pass the time’ into ‘relieve boredom’. However, without fully exploring the meaning of the function within the source publication and exploring the whole dataset for similar semantically coherent functions this is not known. N.B. in the thematic analysis proper ‘to pass the time’ was coded with the ‘structuring time’ code.

However, to suggest that single pass of the data from a semantic and then latent perspective is overly simplistic. Rather, a cyclical or iterative approach to the latent coding is required to ensure that all the data that can be extracted from the datasets can be. The flexibility inherent in thematic analysis methodologies is particularly efficacious here. By using temporary codes (in this instance ‘unknown’) those functions that are listed within the dataset that are not clear after initial coding passes can be scrutinised in isolation and compared with the growing body

of function codes. At this point the research is presented with several potential avenues for each *unknown*-coded data: the data should be coded to an existing function code depending on an appraisal of both semantic and latent data; or the data could represent a unique function that is relatively rare within the overall dataset and a new code for that data could be constructed; or in some instances, the data presented in the original source publication is incorrectly identified as a function and should be excluded from the remainder of the analysis.

Codes, Themes & Functions

Example: Iterative Latent Coding for ‘Unknown’ and ‘Problematic’ Functions

This short example demonstrates latent coding performed on three different publications within the dataset (used in the previous examples).

Study A	Study B	Study C
Memory	To relax	To relieve boredom
Relieve boredom	To pass the time	To reduce loneliness
Relieve loneliness	Music could not be avoided	To relieve tension/stress
Relaxing	To get some company	To be trendy/cool
[list continues...]	[list continues...]	[list continues...]

In the exemplar dataset, study C’s ‘to be trendy/cool’ would be coded as primarily ‘unknown’ in initial passes of latent coding. However, after several rounds of iterative latent coding and deeper research into the concept, the data would be coded as part of the ‘maintaining and expressing cultural values’ code alongside other data such as ‘expression of cultural values’.

Study B’s ‘music could not be avoided’ would be coded as ‘unknown’ in the first instance. However, after several iterations no appropriate coding could be established. It was therefore coded as ‘problematic’ and excluded from the analysis. Problematic coded data is a prime example of the issues with conflation of functions and other music research; they do not adhere to Merriam’s definition of function.

Thematic analysis is typically concerned with bringing smaller semiotic objects i.e. codes, together to create broader, more substantial themes that run through the data subjected to the process. Typically, these themes can be employed to express broader dialogues, patterns, and forces at play from both psychological and sociological perspectives (Braun and Clarke, 2006, p. 97). Thematic analysis has particular popularity in healthcare and social care disciplines as it allows for narratives and qualitative data to be interpreted and expressed in a manner that is, at least in part, rigorous and traceable. Using thematic analysis to deal with mixed methods and multi-disciplinary data such as the functions literature is not the ‘typical’ context in which one would observe such analysis tools being employed. However, as few tools exist that allow for

such analyses to occur, thematic analysis provides well documented set of methodological tools upon which to call.

Example: Constructing Domain Themes

This short example demonstrates theme construction performed on 15 randomly selected codes.

Company	Reflection	Control & Conformity
Pacing & Movement	Communication	Relaxation
Structuring Time	Distraction	Interaction & Bonding
Focus & Concentration	Emotive Memories	Create & Maintain Identity
Escapism & Venting	Surveillance	Entertainment
[list continues...]		

In this example, the function codes have been grouped into four distinct domains of action drawn from the dataset. Here, a deductive methodology (rather than inductive) has been used to expressly search for and theme codes into domains of action as suggested by the functions literature. In this example, the ‘emotional’ domain theme has been populated with ‘escapism & venting’, ‘emotive memories’, and ‘entertainment’.

Although Braun and Clarke reiterate that thematic analysis is not merely procedural, but offers flexibility, they do concede that there is a commonly occurring order to the process; themes are created from grouping codes together once they have been created. However, in the coding processes outlined here, codes have been treated as analogous to the title of functions. If such codes were grouped into themes, it would severely reduce the granularity that could be offered without combining codes into themes would be lost. However, there may be one way in which both perspectives could be maintained and offer a greater degree of specificity and value.

With a broad selection of codes defined, it is then possible to group such codes together into themes. Yet, the coded functions data here is largely amorphous and without structure. However, there are some implicit structures that appear in much of the functions literature that has not been considered as part of the thematic analysis thus far, although discussed previously: ‘domains’. Several researchers have posited that differing functions can be grouped by what aspect of the self they act upon e.g. Hargreaves and North (1999) suggest cognitive, emotional, and social functions. Yet, here we encounter another manifestation of the lack of consensus between researchers. As such, an alternative deductive (i.e. searching for specific ways to theme the data) methodology can be used to examine the data for possible domains in which functions could be situated, primarily drawing on the common domains found in the various publications included within the dataset.

Filtering Functions

Although thematic analysis (especially using an inductive approach) should always be led by the data, there are some necessary caveats to the process that will be imposed throughout the sorting process. The overarching aim of this study is to construct a pseudo-consensus of the functions of music in the extant research. As such, a definition of function is required to ensure that the proposed data points are functions according to a universally applied schema, rather than simply arbitrary data points purporting to be functions according to some undefined mechanism. This filtering is particularly salient given that the literature search expressly captures studies and publications examining the ‘use’ of music to ensure the broadest list of possible functions are captured (even those that have been incorrectly attributed to use).

Unsurprisingly, the only robust definition of function is that of Merriam’s 1964 publication: “the reasons for (music’s) employment and particularly the broader purpose which it serves” (p. 210). As such, if a coded function does not adhere to this definition, it shall be excluded from the analysis. Whilst thematic analysis has a ‘typical’ procedure, the flexibility of such a procedure allows this filtering process to occur at any stage of the thematic analysis. However, in this instance the filtering will occur in the final iterative rounds of the latent coding, as there is likely a considerable cross-over between ‘unknown’ and ‘problematic’ codes and functions that do not adhere to Merriam’s definition. The final list of functions codes will also be confirmed against the same filtering criteria.

4.4.3 Methodology

This analysis draws together extant research into the potential functions of music by bringing together 52 individual studies (12 containing multiple datasets) in an attempt to glean the most expansive picture of musical functionality in everyday life and construct a pseudo-consensus between the various research findings. The studies were identified based partially on the work of Schäfer *et al.* (2013), and from a range of other studies identified in the search process that explore the field from varying disciplines and topic areas. Studies came from a broad range of disciplines: music psychology, sociology, musicology, music in everyday life, music and emotion and sports science (see Figure 14).

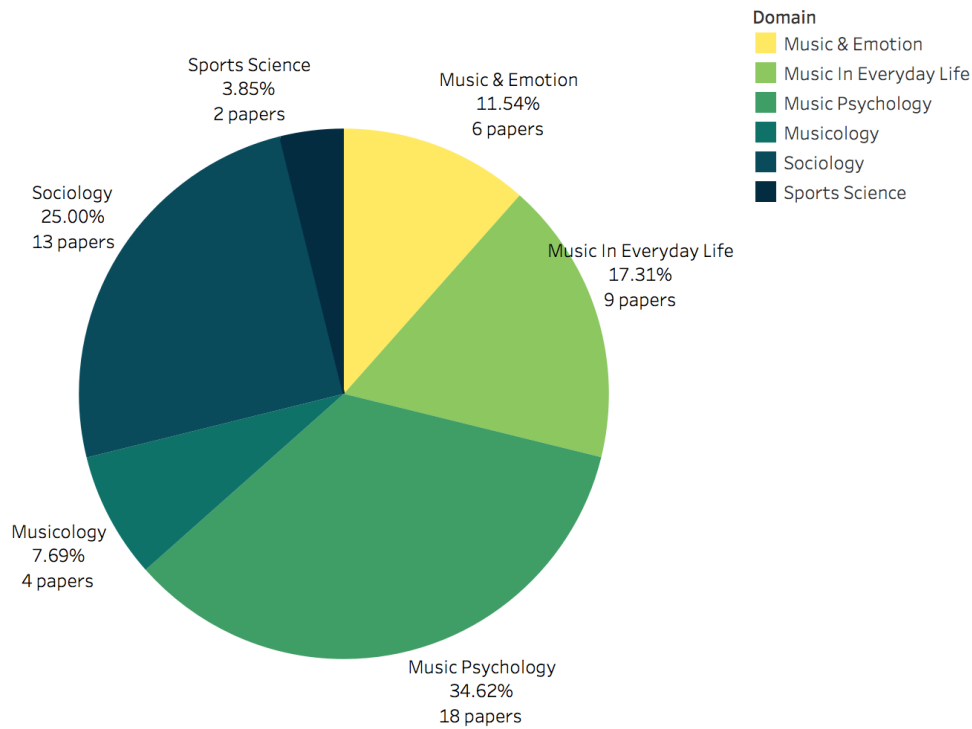


Figure 14 Discipline of papers analysed

Any studies that included models, lists, frameworks, or even singular functions were included within the analysis to give as exhaustive a list as possible, and widens the scope of categorisation and includes additional studies not incorporated into the Schäfer *et al.*'s analysis. This analysis aimed to offer depth and breadth with respect to collecting and qualifying all the potential functions of music currently extant in the research literature. Following Schäfer *et al.* this review does include studies that examine the use of other media types but, unlike Schäfer *et al.*, filtered out reference to any media type that is not music.

Although as already stated, there is no one 'correct' procedure that determines how thematic analyses should be conducted, there is likely a most appropriate procedure for each study owing to its aims and data. Given this and the explanation of the various approaches to codes, themes and filtering explored here, the following figure (Figure 15) summarises the study procedure.

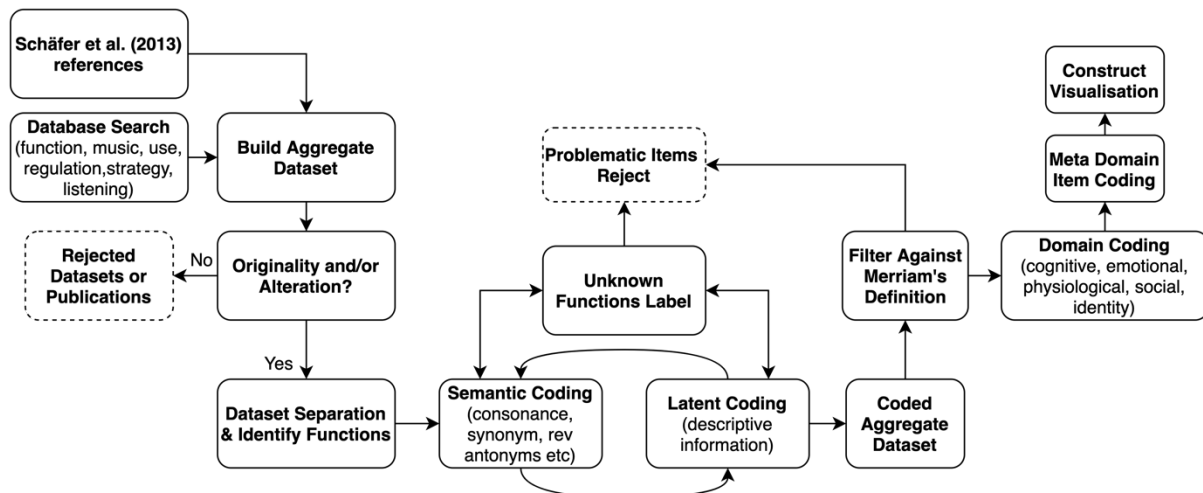


Figure 15 Searching and thematic coding methodology

All identified publications were analysed for expressions of function, with each list or categorisation separated into its component datasets. Items were then coded using the inductive semantic analysis outlined previously. The functions identified grouped together under codes in a series of iterative semantic and latent coding cycles in accordance with the established protocol above. Items that were not readily identifiable were coded as *unknown*. Once all items had been coded, the *unknown* items were then treated to several rounds of iteration, matching them against established function codes or constructing novel ones. Those that did not meet with Merriam's definition were recoded as *problematic* and excluded.

Following the filtering, each code (now analogous to function) was then sorted into broader themes representing the four defined domains (cognitive, emotional, physiological, social) depending on the explanations or extrapolations of the function itself from within the research documentation. As a consequence of the thematic analysis, a distinction within the social domain was observed, those that concern one's relationships in and within groups, and one that concerns one's own presentation and self. As such, the social grouping suggested in Schäfer *et al.*'s analysis was divided into social and identity.

Across the 52 studies, and the 72 datasets within them, it was possible to identify 834 items referencing the functions of music. All papers and functions were considered equally weighted regardless of specialism or impact factor of published papers (or the journal from which they originated) or citation count. Some publications made specific reference to stages of life or ages. Teenagers often employ music to operate on aspects of identity, mood, and for social purposes (Nuttall, 2008), or primarily to alleviate negative moods (Saarikallio and Erkkilä,

2007). Older listeners, or even those nearing the end of life, employed music primarily to engage with memories (DeNora, 2012). Whilst there is certainly evidence that music can be employed to fulfil functions more often at certain points within an individual's life, there is no evidence to suggest that functions are limited by age. The study output did not compartmentalise any finding as a function of age.

A small number of items (27 findings) were labelled as *problematic* (i.e. not belong to a specific functional domain), as they do not fit into Merriam's description of functions but were included by other researchers as valid functions; most were in fact strictly speaking *use*, and others were simply descriptions of musical aesthetics i.e. "it is beautiful". Also, an occasionally suggested function within some discussions of music functionality was one of the "ineffable" (Gunn and Hall, 2008, p. 144) or the "transcendent" (Groarke and Hogan, 2016). Whether this can truly be considered a function or not is difficult to qualify, and any description of the potential utility of this would be difficult to describe beyond individualistic experience. As a result, references to the ineffable were also labelled as *problematic*. These, and the other *problematic* functions were not sorted, were excluded from the final analysis, and are not included in any data visualisations.

The 807 valid referenced functions (excluding the 27 items labelled *problematic*) were sorted into the five potential domains themes. Based on the body of available literature the following definitions were used as the guiding principles when sorting the functions. Numerous studies from varying musicological disciplines were drawn upon to create definitions for each functional domain. The definitions constructed for sorting were purposefully broad and wide-ranging allowing for the greatest scope for sorting potential function materials in a deductive, rather than inductive manner. If terms describing the function items within the coded studies were in some way unclear or ambiguous, the theoretical discipline of the original study was considered as a means by which to illuminate the potential meaning of the findings.

- **COGNITIVE:** *functions relating to the mind and psychological perspectives, interacting with thought processes, mental states, mental action, or perception.*
- **EMOTIONAL:** *functions acting primarily on the listener's emotional states (valence, mood, emotions)*
- **PHYSIOLOGICAL:** *functions that acting primarily on the body, either through neurological stimulation related to body, or through a connection to physical action*

- **SOCIAL:** *functions that enable some interaction between the individual and groups, between members of a group, or in relation to a wider societal conception*
- **IDENTITY:** *functions relating to the conception and presentation of the self, and an individual's identity*

For a minority of functions, sorting became problematic due to language or descriptions by the participants or interpretation by the researcher. The most prevalent example of the imprecise labelling or description of functions was that of “relaxing”. Whilst it is possible to consider relaxation as a physiological function (muscle relaxation or lowering of arousal levels) it is equally appropriate to consider relaxation a cognitive or psychological activity, or even an emotional one when considering heightened emotional states and/or stressors. In the instance of these less distinct functions within the literature the functions were sorted into multiple simultaneous domains with the understanding that the functions can have varying meanings or implications based on which specific functional domain they occur within. This is discussed in the *Meta-domain* portion of this analysis.

4.5 Findings

When examining the data as one large set (see Figure 16) it is possible to identify the most frequently occurring functional domain as that of emotional function, occurring 238 times within the material (29.5% of the total functions within the data). Conversely the least frequent functional domain was the identity domain, occurring only 65 times within the aggregate body (8.1% of the overall volume of functions). The delineation between the social and identity grouping functionality shows an interesting relationship. Whilst identity functions of music were recorded in 65 separate instances, the social functions were reported 157 times throughout the aggregate body. The limited number of identity functions suggests that, while they occur less frequently in the corpus of research, they may be a valid argument for separating group and individual functions. Indeed, this may in fact highlight an overlooked aspect of functions research.

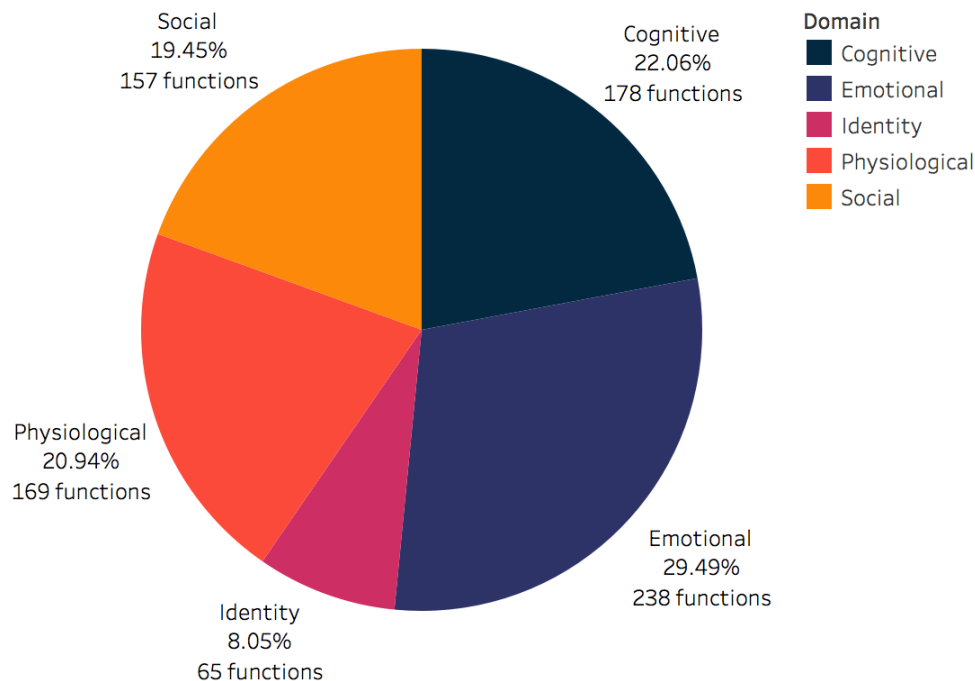


Figure 16 Frequency of functions per domain across all data

Viewing the data from the perspective of domain occurrence (see Figure 17) i.e. how frequently domains are covered in publications, it is possible to identify the cognitive domain and the emotional domain as the most consistently present areas of functionality; 57 of the 72 datasets within the aggregate body contain at least one function from the cognitive domain. The least frequently occurring functional domain across all studies was the identity domain, with only 31 datasets of 72 datasets within the aggregate body including references to identity functions. A less pronounced increase between identity and social is noticeable here also (social occurring in 52 datasets and identity in 31 datasets).

When comparing individual studies across the body (see Appendix B) it is possible to highlight Christensen and Roberts (1998) research as the most function-rich study, providing 39 potential drivers for music engagement (the study explores uses and gratifications of music listening reported by participants), and a significant proportion of the coded functions are situated within the social domain of functionality. Interestingly two datasets, Hargreaves and North (1999) A, and Packer and Ballantyne (2010) B, yielded no useful functional descriptors. The first pertained to overall domains and lacked specificity, and the second offered only one suggested function (“*life satisfaction*”) that did was found to be incompatible with Merriam’s

definition and was therefore sorted as *problematic*. The typical dataset contained a mean of 11 references to functions (when corrected for *problematic* functions).

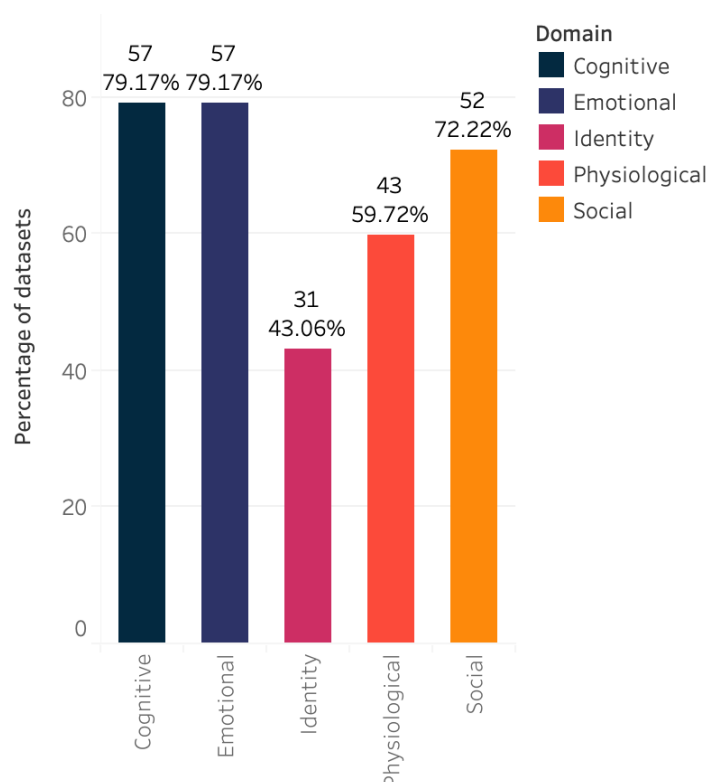


Figure 17 Datasets containing functions within each domain (%)

The frequency of functions identified in each dataset varies considerably across the aggregate body of publications. Datasets containing functions present between 2 and 39 discrete items, with a mean of 11 functions per publication ($M = 11.208$, $S.D. = 8.09$) and a median of 9. However, this figure is likely unreliable due to outliers. When corrected for outliers (interquartile range multiplier 1.5) the mean functions per paper is reduced to 9 ($M = 9.493$, $S.D. = 5.09$). As such, the data is generally consistent, with five significant outliers. These findings do not alter the following output of the thematic analysis, rather they describe the current state of the field of research into the functions of music. The outliers identified here raise an interesting question concerning the specificity of functions presented in research. The publications and datasets identified here can be explained with a combination of two features that the research exhibits. Firstly, the outliers offer a great deal of specificity concerning functions, with some offering sub-functions or smaller variations on larger, holistic functions. Secondly, these publications also include more domains, with less domain focus or specificity exhibited in the more exhaustive approaches to functions research.

4.6 Aggregate Thematic Function Framework (ATFF) & Visualisation

In the thematic analysis it was possible to identify and code 45 different functions of music, the most uncovered in any study of the functions of music thus. These 45 functions are divided into several different domains of action. The Aggregate Thematic Function Framework (ATFF) (Figure 18) represents the broadest and most exhaustive taxonomy of the functions of music currently available and is a proposed consensus between the various researchers and studies (see Objective 4). The functions here represent all the numerous concepts present within the literature. The frequency of each function appearing within the aggregate dataset is included to show commonality of findings in the data, although this does not relate to the frequency of functions employed in real-world listening contexts.

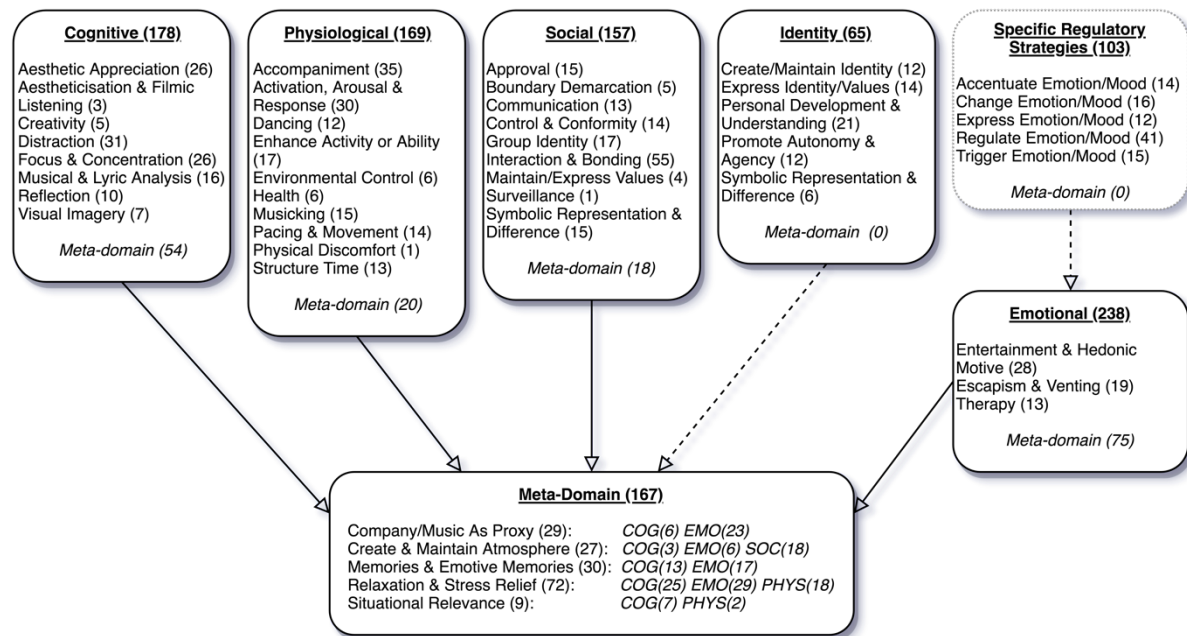


Figure 18 Visualisation of the ATFF (aggregate thematic functions framework)

The most function rich unique domain was the physiological domain with 10 distinct functions (and 169 references within the aggregate dataset). The least rich unique area was that of identity with only five functions (and only 65 references within the aggregate dataset). Some functions within the findings crossed various different domains of functionality. These functions do not represent multiple functions but rather differences in how individual functions operate. As explained, the same functions appear within multiple functional domains, although the specific aspect of the self upon which they operate may be different. Hence, the meta-domain area contains only five functions, but these functions have been referenced in numerous domains

from multiple perspectives, and can be considered to occupy a multi-dimensional or super positioned space (see Appendix C).

The emotional domain is the only grouping of functions that presents a particularly striking point of delineation allowing for a sub-domain to develop. Within the literature numerous references were made to functions that in some way manipulated emotions, but in vague terms i.e. “to influence my feelings” (Juslin and Västfjäll, 2008, p. 676) and “mood management” (Larsen, 2011) among others. It is clear that these functions strongly reference the emotional domain, but their specific meaning remains opaque. When this is combined with other very specific emotional functions that suggest a directionality in the shift in arousal or a particular emotional reflex of some description, it is possible to visualise a subset of emotional functions that are particularly concerned with mood or emotional management that attempts to describe the possible directionality of feelings or arousal (increasing, decreasing, accentuating, maintaining, changing, or triggering). These Specific Regulatory Strategies (SRS) stand apart from other emotional functions as they deal with the constant varying state of an individual (i.e. emotional regulation), rather than other functions under the emotion domain heading that deal with very specific episodes concerning emotion.

The ATFF offers three key contributions to the field of research. Firstly, it offers the most exhaustive and specific description of functionality currently available. It accurately expresses the varying definitions of functions across all salient research and presents it as a holistic taxonomy that defines the interrelated nature of functions in a conception that accounts for all aspects of music-facilitated goal attainment, and does not rely purely on regulatory theory (Moebius and Michel-Annen, 1994; North, Hargreaves and O'Neill, 2000; Williams, 2006). In doing so it fulfils not only the criteria established by Merriam, but also an expression of functionality that incorporates a theoretical grounding informed by goal-orientated, utilitarian listening.

Secondly, the ATFF achieves its primary goal of imposing a consensus upon the extant research across all disciplines of study. The inductive approach to thematic analysis has allowed a larger qualitative theming of functions into six domains of action, but has also expanded the possible taxonomy of functions into the most exhaustive catalogue currently available (the next largest body of functions was Christenson and Roberts, 1998, presenting 39 functions). In enforcing such a consensus, the ATFF has allowed for the disciplinary lines that clearly restrict

some aspects of functions research to be transgressed. Such an interdisciplinary approach is capable of providing breadth, although the specific instrumentality of each function and the qualitative descriptive features presented below are heavily reliant on discipline-specific research. As such, interdisciplinarity proves a useful tool for constructing larger thematic narratives but is likely not the most nuanced approach when examining the details of particular functionality.

Thirdly, it presents an opportunity to track and reassess continuing functions of music scholarship (an earlier iteration of the ATFF can be found in Maloney, 2017). The iterative design of the ATFF and sorting/coding methodology can be continually updated to account for continuing research and expresses the historical and current state of functions of music research. It can also highlight areas that are under researched i.e. the identity functions, or even functions that are rarely researched (such as *Physical Discomfort* or *Aestheticisation*). Also, in the previously published iteration of the bibliometric study (see Maloney, 2017), the social domain was named ‘Social Group’, and the identity domain was named ‘Social Individual’. Hence, the ATFF here provides not only a snapshot of the current state of research but can offer both guidance for further research and allow said research to be easily cycled back into a holistic picture of the newly updated state of research. The ATFF evidences the current state of research into the functions of music and provides a framework to list the possible functions of music.

4.7 ATFF Functions Discussion

The following discussion explores each domain in isolation with a short exploration of the domain of action. Following each introductory statement is an analysis of each function of music identified with the ATFF. Each function is framed within the wider domain of action, unifying the disparate research and expressing it in as a distinct function. The names of functions have been italicised; concepts or processes that share the same name have not.

4.7.1 Meta-Domain Functions

We are not one listener (Kassabian, 2013, p. 106). The choice of how we listen has proliferated and music listening represents a confluence of many different factors: entertainment, communication, and passion (Kusek and Leonhard, 2005, p. 37). However, this flexibility is perhaps best conceptualised as an interplay between domains. As such, the meta-domain presents individual functions

occurring in different domains brought together where there is particular parity. The *Relaxation and Stress Relief* function is a strong example of this. Whilst it is possible for relaxation to occur cognitively, it does not exclude the possibility of both physical and emotional relaxation occurring also. Furthermore, it is possible for the physical and emotional relaxation effects to occur without a cognitive sense of relaxation being engendered. The functions encapsulated within the meta-domain occur in two or more domains, and their associated domain effects may occur independently, simultaneously, or in any arrangement of domain effects.

As such, the meta-domain should not be conceived as a separate domain, but rather something that encapsulates a blend of other domains of function. It can potentially underpin most or all other domains. It represents super-positioning rather than a transitory point between the normal functional domains. The functions reviewed here exist in such a space; across multiple different areas of functionality. However as with many functions, the exact proportions or relevance of each of the areas are situationally dependant and defined by the listener rather than an academic framework.

Music is rarely listened to for one purpose, rather it is an intricate blend of functions selected by listener. Greasley and Lamont (2011) highlight that listeners select music to fulfil multiple different concurrent functions for them. In their analysis, they found 58.2% of listening episodes served three or more simultaneous functions reported by the listener. However, they also point to the lack of research into music's ability to fulfil multiple simultaneous functions, and rather suggest a focus has been placed on everyday functions in an isolated sense. Furthermore, this does not exclude the possibility of additional simultaneous functions being blended into a singular listening episode that are beyond the meta-domain. The following describes each function identified within the meta-domain.

Meta-Domain (167)

Company/Music As Proxy (29)
– COG(6) EMO(23)

Create & Maintain Atmosphere (27)
– COG(3) EMO(6) SOCG(18)

Memories & Emotive Memories (30)
– COG(13) EMO(17)

Relaxation & Stress Relief (72)
– COG(25) EMO(29) PHYS(18)

Situational Relevance (9)
– COG(7) PHYS(2)

i. Company & Music as Proxy

This function was referenced in 29 instances within the data. The function proposes that music can in some way act as a proxy for human contact or as a companion. Often, music behaves quite literally as a physical companion in the form of a listening device (Kusek and Leonhard, 2005), the implication being that the device and the sound issuing from it acts as a substitute for human interaction. It is arguable that music is a human interaction, being the expression of ideas, concepts, viewpoints and emotions expressed by humans as music, or at the very least the music creates the illusion of such phenomena. For adolescents grappling with issues of sociability and identity, music becomes a “substitute for community, warmth and social contact” (Bull, 2000, p. 129). Whilst most evident in adolescence, these effects appear to continue throughout adult life. Lonsdale and North (2011) identify listeners using music as simply background noise to fill silences; silences that remind listeners they are alone.

Particularly within adolescence there is evidence of music being used as a proxy for human contact (Zillmann and Gan 1997; Nuttall 2008; Saarikallio and Erkkila 2007, Laiho 2004) although Greasley and Lamont (2011) point to more highly engaged listeners using this strategy more than less engaged listeners. Often music is employed to allow listeners to gain “solace” (Saarikallio and Erkkila, 2007, p. 96), which has certain implications for the way in which listeners perceive the potential emotional impact of this function, as do phrases such as “alleviate feelings of loneliness” offered by Lonsdale and North (2011, p. 108). These phrases are certainly emotionally loaded and may also speak to the emotional component of this function.

In contemporary society, music is often a proxy or substitute for social contact, due to the eradication of social interaction for so many due to shifting business, cultural and social patterns (Bull, 2000). A great deal of the work on this function comes from a strictly emotional perspective, although some of the references within the aggregate body pertain to more cognitive areas of functionality. Interestingly, given the references to ‘loneliness’ there is no work on this from an expressly sociological perspective, even though the concept of loneliness implies the lack of presence of others.

There is a suggestion that portable music listening can furnish one with “companionship without spatial limitations” (Chen, 1998, p. 266). This “emotional companion” (ibid.) can allow individuals to alleviate a sense of loneliness and there is evidence that, especially in Walkman

usage, listeners use music to “assuage loneliness” (Williams, 2004, p. 111). It should be noted William’s analysis does not account for technological developments, although it is not likely the shift in technology would particularly impact this function, rather it may become a more readily accessible function. It is clear this function, as wide ranging as it is, has not yet been thoroughly examined from all available perspectives.

ii. Create & Maintain Atmosphere

The strongest domain for this function was overwhelmingly social, with 18 references within the domain compared with six from emotional and three from cognitive. It is suggested within the literature that the ambient properties of musical materials (DeNora, 2006a, p. 25) enables music to somehow become an “atmosphere enhancer for social” interactions (Boer, 2009, p. 176). The references and literature on this function can be split into three categories, but all coalesce to define this function as a holistic activity.

Firstly, music can be used to generate some sense of atmosphere or ambience as an underpinning to social situations. It has been termed “sonic wallpaper” (Atkinson, 2007, p. 1912) in that it can help set or maintain a specific mood within a social gathering (Larsen, Lawson and Todd, 2009). As with the *Situational Relevance* function the sense of atmosphere may offer cues and clues as to appropriate modes of action for listeners. Although this function is often referred to in terms of “background noise” (Lonsdale and North, 2011, p. 121), and in circumstances where listeners may not be engaging in any particularly focused mode of listening, it is still capable of transmitting messages and signifiers to listeners. The notion of atmosphere may appear vague or ill-defined, but listeners appear to have a firm understand of what is meant by the term. It is also shown that individuals’ moods may be strongly effected by atmosphere creation (Saarikallio and Erkkila, 2007) although there is no evidence in the literature of controlled studies of this function.

The second instance of this function is as a silence-filler or interim stimulus. Often individuals suggest music “fills the gaps in conversation” and “fills silences” (Gantz *et al.*, 1978, p. 85). There is even discussion of music as a “social lubricant” (Christenson and Roberts, 1998, p. 44), as a function that enables conversation to flow more easily, or allows listeners to share conversations about the music itself as a stimulus. It is likely that in this instance this function shares some similarities with other functions such as *Communication* and *Distraction*, allowing

individuals to shift their mode of interaction to something less fraught with social risk; music is one of the hallmark topics of casual conversation.

Finally, the notion of music as an atmosphere maintainer is referenced, albeit less frequently, specifically in conjunction with notions of romance and courtship. It is apparent this perspective may suggest this is something that should be considered part of the *Situational Relevance* function, but this specific finding is prevalent within the aggregate body and within the literature itself. Kivy (1959, p. 44) suggests music is connected to “primitive courtship behaviour”, and there are two specific references to romance (Larson and Kubey, 1983; Sloboda, 2005b) in the aggregate body.

iii. Memories & Emotive Memories

“The past comes alive to its soundtrack” (DeNora, 2000, p. 67). Memory and reminiscence are consistent attributes of most studies of music functions (perhaps with the exception of Merriam’s original study). Although they occur relatively frequently within the ATFF (30 references) the amount of discussion and conjecture about the potential inter-relatedness of music and memory vastly outweighs its positioning within the ATFF analysis. The material referenced within the framework varies between the cognitive and emotional functional domains suggesting more detached notions of reappraisal and learning, but also more emotionally resonant effects such as nostalgia.

The function is a means through which individuals “relive and reconnect” with their own pasts (DeNora, 2012, p. 101); what Van den Tol and Edwards (2014, p. 5) refer to as “memory triggers” and Groarke and Hogan (2016, p. 10) refer to as “reminiscence”. There is a theme within the literature surrounding autobiographical memory and music; auditory stimuli is capable of triggering autobiographical episodes tied to music (Boer, 2009). Some research points to direct recollection of songs and pieces of music at particular instances, whereas a large portion of the literature seems to suggest memory of times and places in a broader sense, with little concentration on actual, tangible events or specific individuals. Even brief excerpts of musical stimuli are capable of triggering potent memories (Janata, Tomic and Rakowski, 2007). The research suggests that autobiographical memory and music are heavily connected with the construction and appraisal of intrapersonal identity (MacDonald, Hargreaves and Miell, 2012).

Understandably these connections and connotations are intensely personal and subjective, and result from variability in personal biographies and narratives (MacDonald, Hargreaves and Miell, 2012). Sloboda (2005b) draws attention to the concept of flashbulb memory as a potential explanation for the engrained nature of autobiographical musical memory (see Brown and Kulik 1977). Evidence for such recall is from listeners who were capable of detailing “a wealth of information about the social context of their memories” with regards to musically triggered memories (Sloboda, 2005b, p. 185). Negatively valenced or sad music was found to be particularly effective as a trigger for recall (Van den Tol and Edwards, 2014) understandably, given the possible emotional intensity associated with experiencing sad or unpleasant events. Even Adorno (cited in Kassabian, 2013) supported the intense emotional and meaningful nature of musically triggered memories. The “Darling, They’re Playing Our Tune” phenomenon (Davies, 1978, p. 69) i.e. music embedded in memory filled with contextualised meaning for specific individuals, has been a consideration in music research since the late 1970s (see Davies 1978).

It is clear that identity is connected with these memories, and is part of a process of sense-making is something of significance that can then be recalled through music for re-appraisal at a later date (Nuttall, 2008). Shankar, Elliott and Fitchett (2009) infer that an individual’s record collection could be viewed as a physical repository of memory or, at the very least, a bank of potential triggers opening portals to the past. Identity in this instance is wrapped up within and around music from periods of one’s life. Records are objects enabling the retrieval of not just memories, but identities and phases thereof (ibid.). As such this re-appraisal can be considered “on-going identity work” (DeNora, 1999, p. 32). This is perhaps best summarised by Bergh and DeNora (2009, p. 106) who suggest that music is a container of memory, with idiosyncratic practices and biography encoded into the listener. Accessing these musics enables a listener to access themselves in previous iterations. Not only does music remind us of times past, but also selves past.

iv. Relaxation & Stress Relief

Factors related to stress relief and relaxation are the most frequent reference within the entire aggregate body (72 discrete references), although this is summed from multiple domains of function. Relaxation appears to cut across several lines of domain demarcation, appearing in cognitive, emotional and physiological functional domains. The difficulty in attempting to parse the exact nature of the function is compounded by this multi-dimension aspect of the function.

Whether it is more appropriate to discuss relaxation in terms of arousal, cognitive activity or emotional distress is unknown, and represented as such within the literature.

The emotional domain of function offers quite specific demonstrations of how relaxation or stress relief can occur within the domain with examples of ‘calming’ (e.g. DeNora, 2000) and “relax and cope with feelings” (Lonsdale and North, 2011, p. 121) directly linking relaxation to emotional states. Saarikallio, Baltazar and Västfjäll (2017) offer the notion that this function of music’s ubiquity may be tied to these functions, and it can be considered one of the most important functions of music.

Sloboda (2005b, p. 204) suggests that music can offer “an alternative perspective on a person’s situation” that also links the function to more cognitive processes. A great deal of literature also focuses on the notion that it can reduce stress and is something used by people who identify as ‘medium-involved’ listeners (Tekman, Boer and Fischer, 2011). Music can act as a de-stressor when contextualised (DeNora, 2000; Groarke and Hogan, 2016) and the manner in which listeners may contextualise and draw stress relief functionality into action should be considered an active method of listening (van Goethem and Sloboda, 2011). This is further supported by evidence that shows listeners can use music they have specifically selected to aid coping and stress relief (van Goethem and Sloboda, 2011, p. 209; Krause and North, 2014), and aid in neutralising emotional burdens (Leipold and Loepthien, 2015). Indeed, a number of the features relating to this function from within the ATFF analysis point to “coping” as a function (Leipold and Loepthien, 2015, p. 112) as an enhancement to a listener’s extra-musical life (see DeNora, 2000; Jensen, 1995; Laiho, 2004; Larson and Kubey, 1983). Interestingly, van Goethem’s research suggests the musical materials do not have to be perceived as ‘relaxing’, rather, an individual’s preferential music can allow for relaxation to occur (van Goethem, 2010), further obfuscating musical variables in the study of functional or utilitarian listening.

v. Situational Relevance

The inclusion of this function is somewhat at odds with the nature of Merriam’s definitions of use and function. If, according to Merriam, ‘battle’ (as listed by Gregory, 1997, p. 129) is a ‘use’ then that use is employing music to serve a function. In this instance, use in and of itself *is* a function. As previously stated, the overarching concept of music use, per Merriam’s description, is something rooted heavily within a situation. A situation gives music a function, a reason for being. Music is drawn into action in myriad social situations, particularly those of

social or emotional significance; those we could consider rites of passage for many people. Is it possible to hear Elgar's 'Land of Hope and Glory' (Elgar and Benson, 1902) without thinking of The Proms or an American graduation ceremony (Levitin, 2007), or can we hear Wagner's 'Bridal March' (Soden and Wagner, 1980) without thinking of a wedding, or even Happy Birthday To You (Hill and Hill, 1893) without thinking of birthday parties? We employ music to mark significant moments (Crozier, 1997) and also soundtrack the everyday.

Listening is intensely situational (Sloboda, 2005b, p. 320). It may appear odd that *Situational Relevance* can indeed be a function rather than merely a set of variables stemming from the contextual triad, but it is arguable that it stands apart as a function in its own right. Situational relevance is predicated primarily on semiotic meaning encoded in both music and the location or activity. Often music lacks specific universal meaning, but it can, through social significance and distributed subjectivity (see Kassabian, 2013), develop particular meaning in particular situations. It can be a useful tool in decoding extra-musical situational semantics, and suggest specific social behaviours (DeNora, 1999).

It can act as a constant reminder to listeners of appropriate modes of action (DeNora, 2006a). Such meaning is highly social in nature (Crozier, 1997, p. 67) but may also display individual resonances that cannot be tracked. This function cannot in anyway be adequately delineated as each potential occurrence or listening event is tied to that specific situation. There may be innumerable variables that change the nuance of exactly what function the music is serving ranging from physical location, time of day, individuals present, purpose of occasion, to even seemingly irrelevant variables such as the weather. Situationally relevant functions can only be defined by their situation, and as such will always remain the most nebulous but wide-ranging function of music.

As part of this conception of music the notion of appropriateness comes to the fore. The idea of musical prototypicality (Konecni, 1982, p. 499) offers a clue to this appropriateness. Music that in some way is associated with a situation is more capable of affecting individuals in some manner; in that situationally appropriate music is more likely to be preferred and accepted as a directing force. However, Hargreaves and North (1997, p. 96) point out that the use of "She Loves You" by The Beatles would be entirely inappropriate at some sombre occasions, but through liking, personal association and memory it could even be appropriate at a funeral.

However, as with the musical aspects of the musical triad, musical materials and their situational relevance themselves can only be interpreted by the listener(s).

As a final point regarding the *Situational Relevance* function it is worth noting that not all music employed in situations can offer clues as to appropriate modes of listening (Hargreaves and North 1997). Furthermore, some music can be entirely non-typical for situations to the point of incongruity. These concepts may begin to cross into other functions of music (particularly *Create & Maintain Atmosphere*) and should be treated as discrete. However, if situationally appropriate music is available, which certainly appears to be the case with the digital distribution and ubiquity of modern music engagement, it may be that a greater gamut of music may be deemed appropriate in specific situations. We may begin to see a blurring of situational appropriateness beyond the bounds we currently conceive and understand.

4.7.2 The Cognitive Functions of Music

It has been shown that listeners may consciously employ music as a resource in their everyday life to meet a “need” or goal (Laiho, 2004, p. 48). In cognitive functions, music may be used to structure the world and aspects of an individual’s cognition. In some cases these properties are drawn into action to alter mental arousal (Levitin, 2007). There is strong evidence that music is capable of cutting across several psychological processes: perception, creativity, cognition, skill, learning (Hargreaves and North, 1997, p. 3)

Cognitive (178)
Aesthetic Appreciation (26)
Aestheticisation & Filmic Listening (3)
Creativity (5)
Distraction (31)
Focus & Concentration (26)
Musical & Lyric Analysis (16)
Reflection (10)
Visual Imagery (7)
<i>Meta-domain function references (54)</i>

Yet, whilst it would be relatively easy to assume that most psychological functions of music are augmented by a broadly subjective positioning, various cultural and psychological conventions are in play to create a wider field of study (Clarke, Dibben and Pitts, 2010, p. 89). The suggestion that psychological processes underpin many of music’s functions (Boer, 2009) is certainly not without foundation, but it may be misleading to assume a level of conscious employment in some situations. To suggest that because a listener displays an awareness of their functional listening does not infer a function is inherently cognitive, as it may not be acting on the individual’s cognition directly. How consciously engaged with the functionality of music listeners are is something that, as yet, remains unknown, and it would be remiss to present the entire cognitive domain of functionality as one underpinned entirely by conscious and

concerted action. It is clear these functions act on or with an individual's cognition in some manner, but simply stating a listener is entirely aware of their decisions and rationale would be an oversimplification. The following describes each function identified within the cognitive domain.

i. Aesthetic Appreciation

The aesthetic appreciation of music could be considered a discipline in its own right, but from a functional perspective very little work exists as to the potential purposes of employing of music in this arena (although a significant amount of research has been performed from other perspectives, particularly critical theory). It is possible to consider many everyday pleasures as ones stemming from some sense of aesthetic appreciation (Martindale and Moore, 1988) but the activity of 'focused listening' is not seen as something that sits within the framework of the everyday, and using the everyday as a lens it appears a "rather peculiar" behaviour (Clarke, Dibben and Pitts, 2010, p. 77). Adhering to sets of musical notation, concepts, schemata, and modes of listening developed through musicological analysis it becomes possible to examine musical content detached from any real context (ibid., p. 80). Compared with the other potential functions of music presented here, this aesthetic appreciation, or focused listening, exists as a reason for employing music with no function beyond that of the music itself. Just as absolute music is music with no other function than to be heard (lacking programmatic considerations or impressionistic expressions) so focused listening exists merely to allow or enable appreciation. It is a *function*-less function. Yet, this function of music maintains an exaggerated significance in modern musicological study (ibid.).

ii. Aestheticisation & Filmic Listening

Personal portable music listening often gives listeners the impression of viewing or acting within a film or filmic environment (Bull, 2000, p. 96). Descriptions of experiencing listening and its effects on the interpretation of visual aspects of the experience are incredibly common within the literature. Listeners describe the world as a movie script being acted out, or simply that their entire world becomes filmic (Williams, 2004, p. 52). Through the use of music "life is changed into a cinema event" (Bull, 2000; Williams, 2006, p. 21), in a manner similar to narrative transportation (see Leizerovici, 2014) albeit lacking the spontaneous mental imagery. Portable listening offers the listener a world of sonic freedom allowing them to construct soundtracks to follow their lives (Bull, 2007a), and combining this with visual stimuli can create perceived (albeit entirely coincidental) synchronicities for listeners.

Whether the user is ‘part of the action’ is debatable, as more often they are passive observers, producing/overseeing/interpreting the action rather than taking a starring role in proceedings (Bull, 2007a). There also appear to be connections to mood that are less tangible or easy to define. However, there is discussion within several qualitative sources that suggest that the listeners mood is also superimposed onto the filmic scene through the use of appropriate music (Bull, 2007b). There is evidence of some listeners specifically programming their listening to find these combinations and elaborate their feelings towards them (Chen, 1998).

What is clear is that this behaviour is increasingly common (Bull, 2007b) as it offers a stylised world in which to allow the listener to live, however without further study the implication of such an increase for listeners is not known. As with so many functions of music, this aestheticisation is simply another manner in which users can reconfigure their world and garner (perceived) control over the events through music (Bull, 2007b). These soundtracks, occurring in any location, can offer us new perspectives, greater meaning, and even “epiphanies” from the most mundane of tasks or locations (Soukup, 2012, p. 240). In *Sounding Out the City* (2000), Bull even suggests that almost any experience can become a filmic event with the correct music. It is yet another example of music’s ability to transform and offer meaning to any scenario (Williams, 2006). This function’s increasing commonality is likely due to the proliferation of portable listening technologies, and the increased reflexivity with which listeners can select appropriate musical materials.

iii. Creativity

Little work has focused on the ability of music to somehow aid or engender creativity, and only four datasets analysed in the ATFF (5 references in total) offer the suggestion that creativity is a function, albeit often as a “sub-function” under the wider bracket of some self-regulatory behaviour in Boer’s work. North, Hargreaves and O’Neill (2000) explore the use of music by adolescents and suggest music can be a source of inspiration for creative pursuits but leave the material relatively unexplored. Bull (2000, p. 158) references imagination, an idea similar to that of creativity, in the body of the text but does not expressly suggest it as a function of music. Steele and Brown (1995) refer to music as a tool for fantasising, using music to inspire imagination about possible futures and romantic relationships. It is possible that these ideas of creativity or imagination are in some way related to concepts of flow (see Csikszentmihalyi

1990), however it is certainly possible to conceptualise creativity as something that can occur without an individual being in a state of flow.

iv. Distraction

In several studies, participants often report that music “gives me something to do” (Lonsdale and North, 2011, p. 123). Indeed, Lonsdale and North report that 40.21% of their participants reported music being used as mere distraction in this manner with phrases including “to kill time” and “relieve boredom”. Often this function is reported as something to accompany other tasks, particularly mundane cognitive tasks. These views are echoed in other studies (see Saarikallio and Erkkila, 2007; Greasley and Lamont, 2011; Chamorro-Premuzic and Furnham, 2007) This accompaniment however does not imply any real sense of synchronisation, aestheticisation, or pacing, rather it appears to be presented as something to split one’s focus between the task and the listening, especially in the instance where a task does not require an individual’s full attention (Sloboda, Lamont and Greasley, 2012, p. 431). Distraction is therefore inherent in the employment of music and that, unlike aesthetic appreciation, it is likely that the music was not the initial and only impetus in the situation. Within this is also the implication that music is being employed as a cognitive stimulant, and that arousal is also a factor in the behaviour. It is a means of using “unallocated attention” (ibid.).

Some reports of distraction behaviour also include reference to this function as resonating with mood and atmosphere functions, but not consistently (Greasley and Lamont, 2011), or it can be used to distract an individual’s focus from wandering into areas of rumination or worry (Saarikallio and Erkkila, 2007). Van Goethem reported participants employing distraction strategies to distract from emotional or situational variables (van Goethem, 2010), although this is reported less commonly in other literature, with the focus falling predominantly on cognitive tasks. It would be reasonable to assume that some sense of enjoyment or appreciation is required for distraction to occur, but it is clear that in many instances, music can simply be used as distraction without inferring other multiple functions running alongside (with perhaps the exception of *Aesthetic Appreciation* or *Entertainment & Hedonic Motive*).

Sloboda (2005b, p. 216) suggests that conceptualising music as something as simple as distraction behaviour “grossly underestimate(s) the seriousness of many people’s engagement with music”. However, whilst implying that music is perceived by some as mere sonic wallpaper, this only represents one possible function of music. Moreover, it is feasible a

multitude of complementary interconnected functions are running parallel to distraction behaviour when this function is employed.

v. Focus & Concentration

Music is commonly described as a “change agent” (Sloboda, 2005b, p. 204). There is evidence that music can have cognitive effects allowing the listener to achieve an optimal state of focus; sometimes referred to as “self-actualisation”, “peak experience” or “flow” (Clarke, Dibben and Pitts, 2010, p. 79). This is certainly supported by literature that describes music being used during tasks and everyday work to achieve focus (see DeNora, 2000; Sloboda, 2005a; Clarke, Dibben and Pitts, 2010). Music is believed to “narrow the field of attention” and allow listeners to ignore extraneous noise (Sloboda, Lamont and Greasley, 2012, p. 432). Csikszentmihalyi (1990, p. 227) describe the state of flow as being difficult to achieve, but certain behaviours (particularly sport, sexual intercourse, and music) appear to be more effective than others (Clarke, Dibben and Pitts, 2010, p. 80).

Bull (2001) suggests that individuals expressly use music to achieve a particular frame of mind (usually with reference to ‘concentration’). Laiho (2004), Laukka (2007) and Levitin (2007) all suggest that music is used to aid concentration and enhance cognitive function. This ability to create more a more concentrated cognitive state allows further benefits to the individual by allowing a sense of mastery or competence to develop within the listener (often leading to increased self-esteem according to Laukka, 2007, p. 236). Furthermore, Levitin suggests that music can act as a behavioural change agent through conditioning; individuals can train themselves to develop reflexive responses to specific musics to enable flow or concentration to develop in a more predictable, easier manner. There is also discussion of music allowing an individual to perceive their situation differently, as related to problem solving behaviours (Sloboda, 2005b), but this is generally anecdotal and requires further research.

vi. Musical & Lyric Analysis

This function of music remains relatively unexplored within the literature pertaining to everyday music. Given this area’s conceptual proximity to the function of *Aesthetic Appreciation* the area lacks depth. Whilst analytical behaviour may, in some cases, be connected to academic music appreciation, the manner in which the literature presents the function does not necessarily reinforce the connection. Rather, it is perceived as something personal or intimate, as pleasure is gained from analysing aspects of music such as counterpoint

or structural features (Sloboda, 2005b), and Sloboda suggests this kind of analytical listening is something only performed by self-defined music-lovers.

The expert listener that Sloboda posits is not reflected other research referencing *Musical & Lyric Analysis* as a function. Roe (1985) suggests a correlation between lyric analysis and awareness of musical materials as a form of cultural capital enabling group integration and implies a much more distributed everyday level of musical engagement. Whether this infers *Musical and Lyric Analysis* is in fact a socially driven function, or it is simply a concurrent function is unclear within Roe's analysis.

It is also suggested that some form of identity or emotional work is occurring in *Musical & Lyric Analysis* functionality. Greasley and Lamont (2011, p. 60) report participants finding “a sense of identity” through lyrics within music (as with the *Create & Maintain Identity* function) with the potential to lead to some form of emotional catharsis. Others point to the momentary importance of lyrical content (Roe, 1985, p. 357) during times of adversity. Laukka (2007) also cites examples of individuals listening to music to engage with the lyrical content, however the potential reason for this is left unexamined within the literature. Finally, there is also evidence that ‘sad lyrics’ and ‘sad music’ generally (Van den Tol and Edwards, 2014) may be “processed at deeper semantic levels” (Van den Tol, Edwards and Heflick, 2016, p. 1345) and therefore lead to further emotional and cognitive processing.

vii. Reflection

Whilst the nature of the psychological impact of the musical experience is currently conceptually diverse (Saarikallio and Erkkila, 2007, p. 88), music's regulatory functions are generally considered vital for a healthy psychological life (van Goethem and Sloboda, 2011, p. 208). As such, music can be an incredibly insightful and powerful tool in reflecting on one's own life, emotions and mental states. It is suggested that music can in fact be a lens or mirror an individual can employ to gain alternative perspectives on their situation (Greasley, 2008, p. 18). Laukka (2007, p. 226) highlights “to reflect on my own life” as a function of music often employed by some listeners. This may involve re-analysing the day's events, allowing some cognitive distance from emotionally or psychologically challenging events, offer reflection on body states (DeNora, 2000; Vidyarthi, Riecke and Gromala, 2012) or even help the listener achieve some time for mindfulness.

DeNora (2012) believes music can be a facilitator of counselling, a claim supported by the pervasive nature of music therapy research. Of particular relevance is the work of Bensimon and Gilboa, (2010) who highlight ‘music presentation therapy’ as a prime example of this reflection. Individuals are able to offer impressions and expressions of their internal lives and cognition through music, with the music representing themselves and the opportunity to reflect on an outward expression of the internal.

It can even be considered autobiography or diary (Lacasse and Bennett, 2018) and a way to reappraise previous states of being from new perspectives. Saarikallio and Erkkila (2007) posit music is capable of producing similar effects for adolescents and used to make their own worlds more comprehensible to themselves. These concepts clearly resonate with ideas of music as emotional therapy but for the purposes of this portion of the review should be viewed from a cognitive or psychological lens or distancer, rather than that of emotion.

viii. Visual Imagery

The possibility for music to aid in the creation of spontaneous visual imagery is one of the least understood effects of music. As a function it would appear to be in some way connected with that of imagination and the *Creativity* function, as music often inspires mental images.

Descriptions of visual imagery often refer to concepts akin to that of a landscape (Juslin, 2012, p. 136). Composer and critic Deems Taylor explains the types of imagery often associated with music in the introduction to the 1940 animated film *Fantasia*:

At first you're more or less conscious of the orchestra, so our picture opens with a series of impressions of the conductor and players. Then the music begins to suggest other things to your imagination, they might be just masses of colour, or they made me cloud forms, or great landscapes, or vague shadows, or geometrical objects floating in space. (Armstrong *et al.*, 1940)

In addition to the creation of spontaneous visual imagery by the listener alone, this may be a specific attempt by the composer to create the impression of certain spaces. Composers such as Messiaen used naturalistic sounds within their music (in the case of Messiaen it was a replication of birdsong in ‘Catalogue d’oiseaux’) to generate spatial, situational, and geographical resonances. Yet, how far these notions of mimesis are programmatic notions, or concepts the audience is aware of, and attempts to pick up upon to further create mental

imagery is uncertain. Indeed, the programmatic aspects of narrative transportation (see Leizerovici, 2014) are not fully understood or circumscribed.

What is clear is that music does “have something in common with simple forms of sensory experience” (Davies, 1978, p. 25) but any possible behavioural, biological or social driver behind this behaviour or ability humans have to conjure mental images to music is somewhat inscrutable. The evidence for *Visual Imagery* as a function is sporadic at best (e.g. van Goethem and Sloboda, 2011, p. 223) and certainly does not appear to be a very common function with only seven references to this function from within the aggregate dataset.

4.7.3 The Emotional Functions of Music

Darwin suggested that music can arouse our deepest and greatest emotions (Konecni, 2008, p. 123). In doing so Darwin places himself in a tradition that can be traced back to Plato (Kivy, 1959), and is aligned with the vast majority of contemporary scholars who believe that music is capable of reaching us on an incredibly deep and personal level, and an integral source of “emotional experience for many people” (Clarke, Dibben and Pitts, 2010, p. 82). The concept that we respond deeply to music “is not a vague utopian ideal” (MacDonald, Hargreaves and Miell, 2012, p. 462). Researchers are in broad agreement that music is capable of arousing deep and significant emotions in listeners. Davies (1978) points to examples of where music can elicit emotional responses such as laughter or despair but, typically of the time at which he wrote, is more or less confined to the empiricism and concert hall of traditional musicology. More recent work in the field of music and emotion has shown that music can affect us anywhere and at any time, sometimes without notice or desire (e.g. DeNora, 1999; Gabrielsson, 2011; van Goethem and Sloboda, 2011).

Emotional (238)
Entertainment & Hedonic Motive (28)
Escapism & Venting (19)
Therapy (13)
<i>Meta-domain function references (75)</i>
Specific Regulatory Strategies (103)
Accentuate Emotion/Mood (14)
Change Emotion/Mood (16)
Convey Emotion/Mood (12)
Regulate Emotion/Mood (41)
Trigger Emotion/Mood (15)
<i>Meta-domain function references (0)</i>

Saarikallio does not consider emotional functions as functions per se (Saarikallio, 2019). Rather, it is an underlying component in all engagements. This is feasible, although there are certain operations that certainly qualify as functions proper that directly address emotional considerations. Emotion may be distributed throughout all functions of music and aspects of life, but the existence of expressly emotional functions of music is also highly probable. The two views are not mutually exclusive.

With regards to function, many researchers have included emotional functions within their publications (e.g. DeNora, 2000; Sloboda, O'Neill and Ivaldi, 2001; North, Hargreaves and Hargreaves, 2004; Chamorro-Premuzic and Furnham, 2007). The work of Saarikallio and Erkkila (2007) details seven potential emotionally specific musical behaviours (entertainment, revival, strong sensation, diversion, discharge, mental work, solace). Whilst these behaviours (or “strategies”) are numerous, their functions are fewer, and mood change and mood control are often considered the two main emotional functions within music (see DeNora, 2000; Sloboda, O'Neill and Ivaldi, 2001; North, Hargreaves and Hargreaves, 2004; Chamorro-Premuzic and Furnham, 2007). Emotional expression also appears in the work of Merriam (1964) and North and Hargreaves' (1997) review thereof, yet the descriptions offered straddle ideas of communication, mood regulation, physiological response and arousal. It is problematic to include such a nebulous descriptor in this review, as the salient points have been covered in other areas. However, as Saarikallio and Erkkila (2007) are quick to point out, the theoretical field of music and emotion is conceptually diverse and lacks an agreed structure. What is clear is that emotion is the most common drivers for listening (Laiho, 2004). The following describes each function identified within the emotional domain.

i. Entertainment & Hedonic Motive

Music as a form of entertainment may initially appear to also lack functionality in the same manner as the *Aesthetic Appreciation* function might. Often listeners report engaging with music for no other reason than “to enjoy themselves” (Lonsdale and North, 2011, p. 123). Reports and studies often discuss the concept using enjoyment, entertainment, or hedonic motive, although differentiating these phrases proves difficult. Entertainment strategies are common in many studies of music functions. Boer (2009), Lonsdale and North (2011), Hargreaves and North (1997), Jensen (1995), Sloboda (2005), and Levitin (2007) all point to *Entertainment & Hedonic Motive* as a distinct function. Many studies of function make a distinction between enjoyment and music as a function of mood, highlighting the manner in which listeners construct their musical engagements.

Boer (2009) and Jensen (1995) are of the small number of researchers to report participants using music “for fun” rather than including more emotionally loaded phrases, and Hargreaves and North (1999) based their work on that of Merriam that reinforces a definite distinction between enjoyment and emotional functions. What is clear is that listeners simply *enjoy* music.

However, making this statement implies additional consequences for listeners. Clarke, Dibben and Pitts (2010, p. 90) believe “the notion that music is a form of entertainment is tantamount to saying music is a means for people to alter their mood”. The connections between enjoyment and positive mood states is clear, although the suggestion that entertainment explicitly ‘alters’ mood lacks specificity. *Entertainment & Hedonic Motive* functions may also be a way to maintain mood or express mood.

Clarke, Dibben and Pitts’ statement also conflicts with one of the viewpoints presented by Merriam (1964) i.e. that enjoyment can occur concurrently with other functions and behaviours. It may indeed be other functions occurring concurrently with *Entertainment & Hedonic Motive* that may cause a mood to change or shift. Enjoyment remains ill-defined within the literature, but there appears to be an assumption of some implicit understanding of what this function means. Whether all listeners actually perceive enjoyment in the same manner is certainly not confirmed, and to suggest otherwise by omission is problematic. There may be physiological markers of enjoyment presented within a great deal of the “chills and thrills” literature (e.g. Blood and Zatorre, 2001; Nagel *et al.*, 2008; Salimpoor *et al.*, 2009) but whether the experience or perception of this is comparable across listeners is unknown.

Hargreaves and North suggests that variations of novelty, complexity and familiarity surround our potential enjoyment of a piece of music (Hargreaves and North, 1997, p. 86), plus our underlying mood state, however it is important to create a purposeful distinction between functions of *Entertainment & Hedonic Motive* and *Aesthetic Appreciation*. Whilst it is true the two can occur concurrently, and often do, they can also be mutually exclusive phenomena at times. There is no reasonable argument that can be made that all instances of enjoyment are tied to some kind artistic appreciation; music can simply be enjoyed without ‘appreciating’ the intricacies of musical form and technicality. The same can be said for aesthetic appreciation; music can be examined and analysed critically without any hedonic enjoyment being present. However, it is entirely reasonable to suggest that aesthetic appreciation can in some circumstances heighten the perceived entertainment of music, allowing additional avenues by which a listener can find pleasure in the musical materials.

ii. Escapism & Venting

A common function (19 references within the aggregate body), particularly prevalent in the literature relating to the employment of music by adolescents, is that of music functioning as an

emotional escape from the pressures of everyday life or relieving negative effects (van Goethem, 2010). Within the literature there are discrepancies in the description of this function that need to be addressed to truly begin to conceptualise it. Reports of *Escapism & Venting* often occur in parallel with the notion of coping or the *Relaxation & Stress Relief* function. In *Escapism & Venting* functions, music is used as a tool to forget, or to achieve some kind of cathartic release, whereas *Stress Relief* is more related to working through issues or creating a relaxing environment. While the two concepts are clearly related to emotional distress and dealing with such issues, this function can be viewed as a less introspective pursuit with less focus based on problem solving.

Nuttall (2008, p. 107) offers examples of teenagers using music to escape their problems. The work also highlights the possibility that teenagers from single-parent or step-parent families were more likely to engage in escapism through music (although the sample size is not disclosed, and how applicable this is in a wider context is debatable). Saarikallio and Erkkila (2007) also focused on this function being employed by adolescents and suggest the act of venting negative emotions is made easier through loud, fast tempo music. Saarikallio and Erkkila (2007, p. 94) theorise that this music “gives form to negative emotions (and) helped the adolescent release them”. This sense of discharging negative emotions is echoed by Boer *et al.* (2018, p. 216) with listeners using music to “let off steam” and “alleviating frustration”. Boer *et al.* also discusses the notion of escapism, suggesting that rather than confronting negative emotions given musical form, listeners use music to forget or avoid negative emotions by focusing on other musics.

iii. Therapy

Music therapy in a clinical context is an area of music that certainly goes beyond the everyday considerations for the typical listener (although it is clear an area yielding results in the field of psychotherapy). It is possible to identify the same concepts underpinning clinical music therapy as in action in everyday listening also: the use of music to aid emotional and psychological health. Sloboda (2005b, p. 216) believes “musical engagement can thus become a form of self-administered therapy” giving listeners access to a range of emotional stimuli that may be difficult to achieve in certain mood states. Robert *et al.* (1994, p. 910) citing Gallup and Castelli (1989) propose music is a common activity for relieving depression, also reinforcing its position in a clinical setting (Thoma *et al.*, 2012, p. 558).

Therapy can also be viewed as merely an extension of the *Specific Regulatory Strategies* (see below) as a tool to in some way interact with one's own emotional state, through some form of introspection (van Goethem and Sloboda, 2011, p. 213), and enforce some sense of agency on one's own emotions. It resonates with ideas of catharsis, and also with functions relating to *Relaxation & Stress Relief*. It is suggested that therapeutic functions of music may also interact with some of the more cognitive functions (specifically *Reflection*). These three areas all directly act on an individual's emotional state to achieve a resultant change. The change is most likely going to be a positive, as mood optimisation is one of the key reasons many people listen (Konecni, 1982). References within the bibliometric study remain somewhat low, particularly those referring to therapeutic functions. It is highly likely this is due to therapeutic functions being perceived or categorised as SRS functions.

4.7.4 Specific Regulatory Strategies

As an outcome of the thematic sorting process, the Specific Regulatory Strategies were identified as a distinct group of emotional functions. Unlike other functions concerning emotions, they did not pertain to a specific emotional function of music but were rather concerned with managing and directing emotional trajectories. As such, the SRS sub-domain is considered a smaller grouping under the broader categorisation of emotional functions.

The concept of music as a tool for mood management is a common daily activity. Indeed, it is possible that individuals are now using music to specifically regulate their emotions in everyday contexts (Robert *et al.*, 1994; Chamorro-Premuzic and Furnham, 2007), in part due to the availability of music through technologically augmented channels. The act of deliberately influencing mood is typically referred to as “affect regulation”, or more generally as “emotional regulation” (White and Rickard, 2015; van Goethem, 2010). In the literature regarding music and emotional regulation strategies there are comparisons between music and caffeine or alcohol as a stimulant or a relaxant (Levitin, 2007, p. 2), and a comparative study on attitudes of music listeners and drug user and their resultant emotional states (see Gomart and Hennion, 1999). Indeed, the ability to respond emotionally with such a readily available tool such as music may be vital for a healthy psychological life (van Goethem and Sloboda, 2011, p. 208), and can aid the listener to adapt to their situation and regulate their emotions by recognising current states and responding accordingly to direct their listening towards a desired state (Leipold and Loepthien, 2015).

There is evidence to suggest this process is an active process, with the individual listener as agent, consciously influencing their emotions (van Goethem, 2010; van Goethem and Sloboda, 2011) or seek to achieve a certain state to imbue a greater sense of control on the listener (Thoma *et al.*, 2012). DeNora (1999) refers to music in this manner as a “technology of the self”. Listeners possess a level of control over their ability to regulate emotion and mood previously unknown in human experience (Bull, 2007b). The iPod, mobile device, or cloud music player can immediately respond to the transitory desires or moods of the listener (*ibid.*), allowing the individual to experience emotional lifts as and when required (*ibid.*). It has been suggested that we have far more self-regulatory power as far as emotions are concerned due to the proliferation of portable listening technologies (Chen, 1998; Juslin *et al.*, 2008).

Little is actually known about the specific mechanisms by which music can alter our affect or emotions (Juslin *et al.*, 2008), or even how successful music as a regulatory device can be (*ibid.*). Some strides have been made in the area (here referred to as “mechanism of effect”), but little that would offer a conclusive explanation for music’s power over us. This is further compounded by the complex, idiosyncratic nature of each listener’s relationship to, and perception of, the musical materials (Juslin, Harmat and Eerola, 2014, p. 617) and the individualistic manners by which listeners employ these functional strategies (Saarikallio and Erkkila, 2007). The following describes each function identified within the specific regulatory strategies sub-domain.

i. Accentuate Emotion/Mood

Konecni believes “mood and emotion-optimisation are the main function of a listener” (Konecni, 1982, p. 501). The strategy of boosting, enhancing, heightening, optimising, intensifying, (as it is variously termed) or increasing specific moods or emotions is a common thread in the literature detailing the emotional functions of music. Two studies from the aggregate body specifically use “intensify” as a descriptor (Dissanayake, 2006; Greasley and Lamont, 2011). Lonsdale and North (2011) reported this finding as the most frequently occurring function for listeners within their study, whether as a conscious effort or incidentally (in 95.77% of participants). It certainly seems to be one of the most obvious and commonly engaged with emotional functions of music and is reported in both quantitative studies and in less structured qualitative discussions.

In general terms participants speak to increasing certain aspects of their current mood or emotions, and use music to heighten or accentuate their current state, making themselves feel more acutely the state they currently exist in. It may also be that listening and accentuating allows listeners to identify their own emotions more readily (DeNora, 2006; Dissanayake, 2006; Greasley and Lamont, 2011), which may imply that in these cases mood or emotional states are not particularly intense or deep and require further stimuli to make them known even to the individual. It may also be a case of narrowing the focus of a generally valenced state, allowing it to take on specificities defined consciously and actively by the listener. Accentuation strategies are often discussed by participants with some knowledge that they are performing certain tasks consciously and actively, unlike a great deal of other functional strategies explored here that are not often described in such knowing terms by listeners. It would certainly appear that listeners are aware of their accentuation strategies, quite unlike the majority of other identified functional roles.

Whilst accentuation strategies are generally discussed in terms of their ability to increase moods or “improvement of the mood” (Saarikallio, Baltazar and Västfjäll, 2017, p. 380), they do not necessarily work only with positive emotions. Listening may impact on three features of experience: valence, intensity, and clarity, and thus may intensify moods or emotions that are not positively valenced. Music may indeed accentuate any existing emotion (Saarikallio, Baltazar and Västfjäll, 2017; Sloboda, 2005b). It may be the case that certain musical styles or associations would particularly increase anger, rage, sadness, loneliness, or disgust through musical congruity (loud, fast, distorted music may accentuate frustration or anger), or through incongruity (cheerful gentle pop may further accentuate frustration or anger).

Finally, an exploration of the implied opposite of this function is worthy of note. There are no specific examples within the corpus of the ATFF studies that identify ‘diminishment’, de-emphasis, abatement, or attenuation of certain emotions as an active functional listening strategy. It would appear we do not employ music to reduce the intensity of specific emotions in the same way as one might accentuate. However, other strategies explored in the *SRS* functions may account for the lack of this behaviour, specifically, the *Change or Shift Emotions* function. Whether we are capable of reducing an emotion is unknown, it would appear we shift to a different state rather than existing in an ambivalent or null state, and it is certainly unlikely that a stimulus such as music would enable us to achieve an emotionless state given the huge body of writing on the emotional experience of music.

ii. Change or Shift Emotion/Mood

Several studies from the aggregate body refer to the concept of “mood change” (Gantz *et al.*, 1978; Melton and Galician, 1987; Sloboda, 2005b; Karageorghis and Terry, 2009; Greasley and Lamont, 2011), “feeling better” (Behne, 1997), or “lifting my spirits” (Wells and Hakanen, 1991). Sloboda (2005b) cites the function as the most frequently occurring emotional function of music. Rather than heightening a specific mood or emotion, music in this instance is used to shift from one state to another, differently valenced or with a differing arousal level. Wells and Hakanen (1991) and DeNora (1999) refers to this shift occurring on mood, energy level, style of conduct, attention or engagement with the world, inferring a shifting strategy may operate on one or multiple aspects of the emotional experience. DeNora (2000) also ties this shifting strategy to particular modes of action dictated by the situation or context.

In the *Accentuate Emotion* function, there was no evidence found of diminishment or attenuation of certain emotions; this shifting strategy may account for this. Rather than perceiving an attenuation of aspects of emotion, listeners perceive a change to another emotion, thus negating the aspects of the prior emotional experience by replacing one aspect of emotion with another. As with accentuation strategies, shifting strategies may also work to move listeners to subjectively negative emotions or mood states. However, this may be a facet of the situationally rooted experience dictating a specific shifting strategy to achieve the contextual goal defined by the listener. Robert *et al.* (1994, p. 921) alluded to such shifting strategies, with particular reference to shifting away from negatively valenced states and, in their study, pointed to this function of music as being the most frequently employed function in the emotional domain.

Leipold and Loepthien (2015, p. 113) draw a comparison with the *Company/Music as Proxy* function, suggesting that emotional change strategies can be used to alleviate loneliness. Within the literature there are examples of shifting strategies from two directional perspectives: firstly, the listener wishes to move to a specific mood state, or alternatively, to reduce or alleviate a specific characteristic of their current experience (North, Hargreaves and Hargreaves, 2004). DeNora (2012) also echoes this, albeit with reference to specific mental wellbeing for those with terminal illnesses.

The manner in which change or shifting strategies are discussed mirror those of accentuation strategies; they are active and often conscious decisions made by listeners with specific goals in mind. Lonsdale and North (2011, p. 109) suggest the word “readjust” as a constant, evolving strategy of shifting is employed by listeners as part of their everyday experience. However, we should also consider the limitations imposed by technologies of years past, and how this may have curtailed this kind of constant readjustment i.e. limited listening choices or lack of the currently experienced ubiquity of the celestial jukebox.

One caveat with regards to shifting or changing strategies exists in the literature. Sloboda (2005b, p. 204) suggests it may not be feasible to shift between any and all moods. Rather, it may only be possible to shift one’s emotional or mood states to associated states or ones that are “on the agenda” for the individual. He also suggests that an evaluation or appraisal of the context listening occurs in may preclude certain moods from the list of possible mood destinations. It may indeed be difficult to shift certain aspects of mood, valence, arousal, or emotion in particular settings, but these considerations are entirely embedded within the individual differences of the listener and the contextual triad.

iii. Express or Convey Emotion/Mood

Occurring 12 times within the aggregate body, this function is one of the least commonly referenced. The literature also lacks depth of discussion of the specific features of this listening strategy. One of the few cursory mentions of the function (see Giles *et al.*, 2009) explores this function’s manifestation in a third party use of music (the giving of mixtapes for romantic purposes) as a means to express one’s emotions to another. In a manner similar to several identity domain functions, music may present an outward display of an individual’s inner self and emotional or mood state.

However, this may also be a strategy by which to individuals solidify their own emotions or mood states, reinforcing how they already feel. This may in some way be tied to notions of arousal maintenance, albeit tied more strongly to specific emotional nuances, rather than larger scale arousal modulation/regulation. It may allow individuals to reinforce a current emotional state by reflecting said emotional state back to the listener through the music, creating a feedback loop of mood states, as affirmed in the various iterations of the Reciprocal Feedback Model in this thesis. Finally, it is feasible that the presentation or expression of emotions through music may be a strategy by which individuals can come to identify (DeNora, 2000, p.

68; DeNora, 2006) and realise their own emotional states, in a continual feedback loop. Music in this function may act as a mirror or lens by which to view one's own emotional self and create an outward auditory expression of that emotion. The listening strategy may offer a means for individuals to create some sense of emotional parity between their outer and inner selves, making the inner self outwardly audible, and the outer stimuli match the current emotional core of the inner self.

This function is distinctly under-explored within the literature and represents one of the least defined or understood functions of music.

iv. Regulate or Maintain Emotion/Mood

The most commonly occurring SRS function within the aggregate body was that of general mood or emotion regulation (41 references). The references within the aggregate body and in the connected literature, whilst extensive, are somewhat lacking in detail and speak to the function in broad, rather nebulous terms. However, it has been found that mood control or regulation is an incredibly common strategy (Bull, 2007b, p. 71). In the aggregate body several studies reference notions of regulation or management (see Moebius and Michel-Annen, 1994; North, Hargreaves and O'Neill, 2000; Laiho, 2004; Williams, 2006; Laukka, 2007; Boer, 2009; Krause, North and Hewitt, 2013). Other studies also make specific reference to mood management in both positively and negatively valenced states (see Lonsdale and North, 2011; Laukka, 2007). Interestingly, Christenson and Roberts (1998) also point to individuals "ruminating on a bad mood" through this form of regulation. These strategies may be important for other associated functions such as the *Memories* function.

Implicit within this function are notions of maintaining, preserving, and keeping a consistent emotion or mood state through music use. This may involve maintaining arousal levels through music or reinforcing aspects of valence by negotiating the intricacies of arousal and valence in real time. Williams (2004) makes reference to listeners using portable devices to preserve a desired mood. Listeners in a portable setting may "prioritise continuous, uninterrupted" states in everyday life (Bull, 2007b, p. 71). Bull further expands on this strategy suggesting the repeat function many devices possess may be key for maintaining a state, reinforcing the emotion or mood state through repetition of a singular piece of music. Maintaining a state was found to be the strategy of choice for activities that are particularly demanding in terms of cognition and attention (Kamalzadeh, Baur and Moller, 2012).

The aggregate body also suggests more general, less definite regulation strategies. These may refer to combinations of the other SRS functions employed in a constantly shifting and reactive manner to adjust to changing situational demands. Many researchers stress the importance and ubiquity of this functional strategy in everyday life (Robert *et al.*, 1994; Chamorro-Premuzic and Furnham, 2007; Thoma *et al.*, 2012), and that the behaviour is one that highlights the adaptability of individuals in varying listening contexts (Leipold and Loepthien, 2015). Perhaps most poignantly, there is evidence that implies that viewing this listening strategy as a modulating combination of other SRS functions is capable of fitting all regulative purposes (Saarikallio and Erkkila, 2007).

Finally, Saarikallio and Erkkila (2007, p. 105) also suggest that “exploration” may be an aspect of this listening strategy that is not considered. It is feasible that listeners may be exploring their own current emotions or mood states and attempting to locate the most effective state for their current context, however this lacks evidence with no reference to this aspect of regulatory behaviours listed in the aggregate body.

v. Trigger or Elicit Emotion/Mood

The literature surrounding this regulatory function often makes reference to listeners employing music to achieve specific emotional states. Gantz *et al.* (1978, p. 87) report happiness, sadness, and anger as emotions that can be accessed, trigger, elicited, casted, or launched by targeted listening. There are also references to joy (Laiho, 2004, p. 50) or simply “getting in the mood” (Gantz *et al.*, 1978; Roe, 1985). These triggered mood states may allow us to accomplish certain tasks (Gantz *et al.*, 1978; Roe, 1985). However, we should consider the innate variability of experience due to the inscrutable nature of individual differences, previous experiences, and inherent expectations induced by a setting or context on the possible manifestation of emotions for the listener. Furthermore, Leipold and Loepthien (2015) also point to the inability to predict who can access these emotions and at what time.

In this function it is possible to conceive music as a “container” for emotions, feelings, or some quality/character of experience (DeNora, 2000, p. 58). DeNora’s suggestion links directly to the cognitivist perspective, suggesting that certain music expresses specific emotions that can firstly be perceived and then induced onto the individual’s emotions or mood states (see Thompson, 2009; Laukka, 2007). It also infers an inherent understanding on the part of the listener of

which pieces of music express and induce specific emotional states. DeNora's containers are tools, the utility of which are entirely individualistic and known only to the user. One musical container or piece may be an entirely different tool to another listener.

Whilst this functional strategy is not the least frequent in the aggregate body, it is one of the most difficult to define as it clashes somewhat with the underlying notions of other functions (particularly *Change and Shift Emotion*). The notion of triggering specific emotions appears somewhat at odds with changing or shifting emotion strategies, as triggering any emotion or mood would appear to imply a change from a previous state. Triggering may in fact only be an appropriate description when the individual's emotions are in a neutral or non-polarised state. The inherent disagreements within the field of music psychology make this inference problematic. Yet, it is certainly feasible that individuals may temporarily exist in a neutral valence state, and music may tip the balance away from the central point of the scale either towards a positive or negative valence. It is also possible an individual may simply be unaware of their current emotional state and, in a similar manner to other SRS functions, music may intensify their emotional allowing them to recognise it, or push them to a different, more intense emotion or mood state. In essence, triggering as a strategy may be changing or shifting in disguise, without the listener being aware of their current state. However, both *Change* and *Trigger* functions occur with equal frequency within the aggregate data, both with differing descriptions.

Finally, it may be possible that triggering is a more specific form of changing or shifting strategy. Unlike simply enabling a change from one emotion to another, or in some way alleviating negative/unwanted emotions, triggering strategies may allow the listener to shift from one state to a different *specific* state. Triggering could be considered changing with a pre-defined destination in mind; a destination specified by the emotions within the container consciously or actively selected by the listener to achieve a specific emotion or mood state. This may offer a point of difference between the two functions, although this is currently hypothetical.

4.7.5 The Physiological Functions of Music

Until recently the physiological functions of music were considered unworthy of serious study (Warner, 2003, p. 15). The cognitive, social and emotional functions of music notwithstanding, there are certainly musical features that do elicit physiological changes within the human body. The growing body of literature exploring the effects of music to enhance sports performance, the entire discipline of embodied cognition and movement subjects, and data gleaned from the study of portable music all coalesce to form a wide-ranging and varied conception of the physiological functions of music. Levitin (2007) suggests music is a means by which individuals accomplish certain tasks (some physically or bodily), and is not something that exists simply in the realm of the cognitive, emotional or social. Schwartz, Fernhall and Plowman (1990) highlight several sources that evidence music's capacity to enhancing performance when performing physical tasks (although the paper also includes several examples where music has been a negative influence on performance also), and Brownley, McMurray and Hackney (1995, p. 194) points to the then-burgeoning interest in the "ergogenic"¹⁴ functions of music to drive athletic performance.

Physiological (169)

Accompaniment (35)
Activation, Arousal & Response (30)
Dancing (12)
Enhance Activity or Ability (17)
Environmental Control (6)
Health (6)
Musicking (15)
Pacing & Movement (14)
Physical Discomfort (1)
Structure Time (13)

Meta-domain function references (20)

Karageorghis and Terry (2009) offer the most thorough analysis of music's potential functions for athletes. Their framework divides potential use into three categories: asynchronous music (background or atmosphere music), synchronous music (regulating pace and movement), and pre-task music (for cognitive or psychological focus). It is clear that, for sport at the very least, not all functions of music concern the physical body, but it is also apparent that for the ergogenic properties of music to be most effective music must act in multiple domains of function simultaneously. The review here focuses on the physiological functions of music although, as with many of the functional descriptors explored from the ATFF, the idea that functions are singular items, without crossover or layering, is a misconception. The following describes each function identified within the physiological domain.

¹⁴ "An ergogenic aid can be broadly defined as a technique or substance used for the purpose of enhancing performance" (Thein, Thein and Landry, 1995, p. 426)

i. Accompaniment

A fifth (20.71%) of all functions coded as *physiological* functions fit into the category of *Accompaniment* (35 references). The literature is rife with examples of individuals listening to passively soundtrack their everyday behaviours. These examples present a range of everyday experiences such as housework, cooking and cleaning, sex, and drinking alcohol (Juslin *et al.*, 2008; Levitin, 2007; Gantz *et al.*, 1978). However, the manner in which the function is presented in the literature is not similar to that of *Distraction*. The purpose of accompaniment is merely to engage the listener in a manner that in some way eases or enhances the task, not to ignore it as with distraction. Often the function is also referred to in terms of ‘background music’, but again this does not necessarily imply music is being used to create an atmosphere (as in *Create & Maintain Atmosphere* functions).

While this is a common function of music employed by listeners, it is not seen as particularly important by many. It can certainly improve experiences of tasks but is not necessary for them. There are some instances of individuals referring to this as important such as “I need music in the background while I’m doing something else” (Boer and Fischer, 2012, p. 187). The relative nonchalant manner in which the function is discussed within the research seems at odds with how often it is referenced. In a study conducted by Chamorro-Premuzic and Furnham (2007) background music was found to be one of the most commonly reported musical functions. There is a suggestion that accompaniment can help reduce the “drudgery” of everyday tasks (Christenson and Roberts, 1998) but this could be argued to be a distraction strategy rather than simple accompaniment. As with *Entertainment and Hedonic Motive* functions, it may simply be ‘something to do’.

Sloboda has offered numerous examples of accompaniment occurring while listeners are travelling (e.g. Sloboda, O’Neill and Ivaldi, 2001; Sloboda, 2005a; Sloboda, Lamont and Greasley, 2012). Given that travelling is arguably a passive activity this may be a way to make a dull experience in some way more engaging, by utilising some unallocated attention of the listener (again in a similar manner to *Distraction*). There is an intersection between accompaniment and notions of pacing, with some listeners reporting a relationship between music and their physical activity i.e. walking in time with the music as reported by Heye and Lamont (2010). Accompaniment also has the implication that all musical engagement possesses; even in mundane situations it may indeed be able to exert some influence on the emotion of the individual, but this would certainly be dependent on the listener.

ii. Activation, Arousal & Response

There is a generally accepted consensus that music in everyday life serves arousing/energising functions (Tekman, Boer and Fischer, 2011, p. 372) although few studies have explicitly focused on the interaction between music and physiological arousal in exercise (Hallett and Lamont, 2019, p. 4). These findings are particularly prevalent in literature pertaining to the function of music in sport, performed by Karageorghis and Terry (2009), arguably the most prolific researchers in this field. It has been shown that music is often employed in an active fashion to encourage motivation (Levitin, 2007, p. 2). Typically, this is a deliberate attempt to manipulate their level of arousal rather than accepting passive aural stimuli, regardless of content (Lonsdale and North, 2011). Furthermore, it is seen as a deliberate attempt to shift arousal with a specific target of a situational goal (North and Hargreaves, 1997). Selection of music is specifically geared towards altered physiological arousal. Often this is due to the necessity of the task at hand, and shifting their arousal through their own agency is a ‘tool’ with which listeners manage their physiology (DeNora, 1999).

Within the literature related to sports and those referencing physical tasks, there are significant references to employing music to “get pumped up” (Larson and Kubey, 1983; Wells and Hakanen, 1991; Christenson and Roberts, 1998; Laiho, 2004). Through this function it is possible to increase mental arousal, excitement and emotions, and the inherent impact that it can have on physiology infers this function belongs as a separate entity within the physiological domain rather than considering it part of the emotional domain (although the two are incontrovertibly connected through the target behaviour). Karageorghis and Terry (2009, p. 29) assert this “pumping up” (what they title “pre-task music”) can improve physical performance (the same terminology is used in Laukka and Quick’s 2013 study), but place the burden of the effect on the concept of flow rather than a physiological marker. Such pre-task music can be “played at a point where the individual is struggling with willpower to start a workout” (Hallett and Lamont, 2019, p. 6), although the authors do not suggest where the locus of this motivational response is elicited (cognitive, emotional, or physiological).

Finally, the literature on chills (see Nagel *et al.*, 2008; Colver and El-Alayli, 2015; Blood and Zatorre, 2001) is worthy of note, as the physical manifestation of music in the body (physiological markers such as galvanic skin response, shivers, heart rate) all have a bearing on this function. Responses to music can physically change aspects of human physiology, but this

area of research strays into induction mechanisms and is beyond the scope of this particular research.

iii. Dancing

“Dance music... is rarely considered worthy of serious study” (Warner, 2003, p. 15). In this instance, Warner was discussing dance music as a genre (disco, house, and techno) but could have quite easily been talking about the function of dancing to music. Little to no examination exists as to this function of music. Obviously there exists a great deal of material from the field of dance, theory, form and effects, little research examines the behaviour from the perspective of the functions of music. It could even be that dance has never been explored from a functionality perspective before, with the body of the studies focusing on it as an art form or as a sociological construct. Music is often employed as a co-operative function with social bonding in the form of dancing (Lonsdale and North, 2011, p. 123). Music is used to enhance or alter energy levels resulting in “thrills and inspiring dancing and movement” (Saarikallio and Erkkila, 2007, p. 94). It is easy to perceive this as a socially learned and mediated behaviour but does not explain dancing in solitude. There is evidence that points to physiological changes in the body and chemical responses that show that music is not reliant on the conscious mind.

10 studies reference *Dancing* as a function in the ATFF analysis (12 references in total), yet none of the studies go beyond listing listening responses, and do not examine possible drivers for engaging in the behaviour. It would be possible to offer some conjecture as to the possible function of *Dancing* based on some other concurrent functions that may be occurring during dancing (*Activation, Arousal & Response; Interaction & Bonding; and Escapism & Venting* are likely concurrent functions) but these would merely be assumptions. This poses the question as to whether *Dancing* is actually a *function* or a *use*? It is certainly situational and an activity, which according to Merriam qualifies as *use*, but is often reported by individuals surrounded by items that are clearly functions. Furthermore, it is arguably a reason for engaging with music as dancing is capable of inspiring other functions (especially physiological and emotional ones). The notion of *Dancing* as a function of music requires further investigation to ascertain its nature within possible conceptions of music’s functionality.

iv. Enhance Activity or Ability

Within sports literature it is possible to identify examples of music reducing perceived effort (Karageorghis and Terry, 2009, p. 18). Whilst the cause or induction methodology of this is

most likely a cognitive mode of interaction, the function of this is clearly something rooted in physiology. Listening can, in some instances, enhance physical abilities through a range of different mechanisms. Indeed, this function alone lacks particular references beyond some cursory mentions. It may be that this function represents a collation of numerous other functions, but this relationship is one that, at this time, cannot be unpicked. It is likely there are elements of arousal stimulation, pacing, emotional regulation, and flow all occurring to enhance listeners' physical abilities. A further explanation may lie in the musical materials offering a cognitive ego-enhancement somewhat akin to physical "power-posing" techniques (Elvers, 2016b). This enhanced ego state may lead to increased risk-taking behaviour (Elvers and Steffens, 2017, p. 2) potentially engendering greater success in certain physical endeavours.

The scant explanatory literature available seems to suggest an underlying cognitive imperative, but the specifics are lacking. This is rather surprising given the 17 references to the function. It is likely the studies exploring induction mechanisms (see Juslin *et al.*, 2016; Juslin and Västfjäll, 2008) may offer some clues as to the positioning of this function, and whether it is in itself a function; there is always the potential this is not a distinct function, but rather something that is observed as an outcome without considering its constituent underlying causes. What is certainly clear is that many athletes believe music is an important part of their routine/regime (Laukka and Quick, 2013, p. 209) and that the resultant effects reported often include an increase in "activation, motivation and performance" (ibid.). Interestingly, athletes also frequently report increased positive affective states (ibid.), although whether this is a result of the musical stimuli or their perceived performance partially resulting from employing concurrent musical stimuli is not explored in the study.

v. Environmental Control & Aural Filtering

Music has always represented a retreat from the "real world" (du Gay *et al.*, 1997, p. 20) whether into a realm of introspection, spiritual enlightenment, or hedonistic abandon. For portable listeners music can allow an escape into the their inner soundscape (Williams, 2006, p. 28). Williams' "environmental control" function is concerned with the cessation or exclusion of the outside world by creating a sonic filter to remove the "aggressions of the city" (Thibaud, 2003, p. 330). The act of physically blocking ones ears with headphones and then masking the aural component of the world with one's own choice of sounds is a concerted attempt to recapture control of a passive sensory organ such as the ears (DeNora, 1999). In this sense, *Environmental Control* is about simply creating a more tolerable environment for the listener

(Chen, 1998). Given the sonic over-saturation of the world, silence is rarely an option, hence enforcing one's own choice of listening becomes the only alternative (Wallis and Malm, 1990, p. 135).

There is also evidence to suggest that some silences (when they are available) can be perceived as uncomfortable, and portable listening is seen as a socially acceptable solution to this issue (Heye and Lamont, 2010, p. 108). Mostly this function allows the listener to achieve a level of control by blocking out the world, and engenders a greater level of focus by removing potentially distracting stimuli (Bull, 2005, p. 249). Furthermore, auditory separation may indeed be key to achieving some situational goals such as emotional regulation or mood change (Bull, 2000, p. 191).

vi. Health

This potential function of music to, in some way, engage with physical health and wellbeing is only referenced in a small number of datasets in the aggregate body (six studies). The actual specifics of what is meant by authors and by listening participants is left unexplored and is ill-defined in the extreme. However, there are some individuals who have made strides in attempting to qualify the area. DeNora (2012) examined the potential of music to engender a 'perceived' state of wellbeing at the end of life. The work draws together many different areas of function (mainly cognitive and emotional) but there is a suggestion that music can influence how well individuals perceive themselves to be (as in identity functions).

The body of literature on music in sports also reinforces potential health benefits of music, albeit only as an incidental function. Music in sport can allow individuals to enhance their performance and aid an individual in their exercise, resulting in the typical health benefits associated with exercise. There is also a potential intersection with the notions of therapy which would further reinforce the physical, cognitive and emotional interconnectivities the literature presents. The recent academic interest in music and wellbeing notwithstanding, the studies referencing *Health* as a function are abstract and unspecific. This is so overt that defining health beyond a vague sense of listeners 'feeling better' somehow becomes difficult. It is likely *Health* is not an easily actionable function of music, and at this stage might merely represent a point of intersection within the bibliometric data rather than a distinct function in its own right.

vii. Musicking

15 references in the entire ATFF relate directly to the notion of engaging in music as an activity (playing, learning, singing, or concert attendance). Perhaps surprisingly, music listening to facilitate musical learning is almost entirely absent from the studies into musical function analysed for the ATFF. Given the academic focus on musicological analysis, the absence of music as a tool employed by musicians to learn from may appear initially at odds with the established discourse. However, considering this analysis focuses primarily on the everyday functions of music, rather than those rarefied functions appearing as part of the ‘serious music’ discourse, it may be possible to justify such a disparity in the aggregate dataset. Williams points particularly to the function of listening to music as an outline for performance and musicianship as something that can occur within a portable setting (although there is no reason this cannot occur in the home or within other many musical contexts). Yet, this research sees it as a function that primarily acts as something cognitive as it is rooted in analysis or study, regardless of physical location. It is also suggested that musical activities develop aspects of personal identity (MacDonald, Hargreaves and Miell, 2012).

viii. Pacing & Movement

The function was referenced 14 times within the aggregate body, with a large proportion of the references to pacing in the ATFF reinforce the importance of rhythm. Clarke, Dibben and Pitts (2010, p. 102) refer to the importance of the pulse within music, suggesting it can allow individuals to perform tasks in sync with the music “with precision and efficiency”. This is given further weight when considering Christenson and Roberts’ (1998, p. 42) inclusion of “rhythm for exercises” as a factor. Individuals synchronise their movements and actions to particular musics to enable pace setting. Evidence suggests greater performance for runners can be achieved through the use of metronomic pacing (see Bood *et al.* 2013). These ideas are now even intersecting with the way in which some users physically access music. Spotify’s now defunct “Running” feature allowed users to measure their pace and speed up or slow down music to match an individual’s stride rate (Spotify UK, 2016).

It is possible that music enhances motor control, fine muscle movement, and an increase in perceived stamina (Brownley, McMurray and Hackney, 1995; Urakawa and Yokoyama, 2005; Edworthy and Waring, 2006; Clarke, Dibben and Pitts, 2010). Much research has been performed concerning the use of musical or rhythmic stimulation to aid individuals suffering motor function impairment, particularly those with Parkinson’s and related diseases, to

improve gait length, speed, symmetry and regularity (Bella *et al.*, 2017). Even everyday movement (walking or cycling) can be synchronised, and be perceived to be improved by the use of music (Heye and Lamont, 2010). There are also findings that loudness can be a factor in increasing physical response, and the act of physically feeling auditory vibrations from speakers within the body can be a factor in heightening physiological response (Edworthy and Waring, 2006). Defined pacing using an audio stimulus may also increase time to exhaustion (Bood *et al.*, 2013) during running.

Both Sloboda, Lamont and Greasley (2012) and DeNora (2000) point to the potential of entrainment as a possible function that would also intersect here. It is possible that through repeated music use, pacing and movement becomes more natural and more well practiced within the body itself. However, this has certain implications for *Memories & Emotive Memories* functions and poses questions about embodied cognition and ideometric responses that are too numerous to explore here.

ix. Physical Discomfort

The strategies of causing physical discomfort through music are incredibly rare within the literature. Only one of the datasets references the function (London, 2014), but thankfully with some discussion. London points to the use of the controversial ‘mosquito’ device as an example of “thug-repellent” (ibid., p. 254). Through using high-frequency sound the device aims to stop loitering in public areas by causing younger listeners discomfort (owing to the effects of presbycusis and the attenuation of high frequency sounds). Recently, there have been instances of local government bodies using novelty songs played on repeat throughout the night to deter homeless people and drug dealers from parks and public spaces (Beaumont-Thomas, 2019). Another example of this function can be identified in military situations. The use of sound/music as a torture device is not common but has been reported (Bergh and DeNora, 2009, p. 110). Through repetition and loud volumes sound can cause physical discomfort, and has been termed “sonic warfare” (Goodman, 2009). Goodman (1999, p. 21) also points to the use of music as an irritant during the 1993 WACO siege.

Perhaps more than any other function of music this is one that is beyond the control of the listener. By its very nature functional strategies of discomfort are enforced upon the listener by others in a position of control. It is not a strategy the listener elects to employ but is rather mandated to endure. The reversal of control in this function is very unusual and may represent

the only function that is forced on listeners from beyond their sphere of influence. One might go as far as to say that, in this function, muzak can be weaponised.

x. Structuring Time

In a related function to *Distraction*, music is often employed by listeners to structure time. Rather than simply giving listeners “something to do” (Lonsdale and North, 2011, p. 123) the *Structuring Time* function acts as a stopwatch or countdown, allowing listeners to perceive the passing of time. Williams (2006, p. 98) highlights this as function as enabling “time management” for listeners, although an implicit familiarity with the musical materials is necessary for any accurate time management. Particular significance within the aggregate body of the ATFF is made to structuring time whilst travelling (Heye and Lamont, 2010, p. 108) and due to its interaction with *Distraction* functions can even reduce the perceived length of said journeys (ibid.). Bull (2005, p. 344) points to listeners personalising journeys using playlists designed to structure time and space around them.

In broad terms, the body of literature used within this analysis tends to follow the trend best typified by Clarke, Dibben and Pitts (2010): they group the *Structuring Time* function with concepts of *Pacing & Movement*. The notions of time and movement connect with notions of space, an idea presented originally by Mussulman (1974, p. 93) who suggested “qualifying time and space” as a function of music. As with many other functions this is likely to occur in conjunction with other functions, as it is unlikely listeners engage with music purely to structure their time without any reference to entertainment, distraction or arousal manipulation.

4.7.6 The Social Functions of Music

There is often a suggestion within the literature, exemplified by Boer (2009), that far too much emphasis is placed on the individual or personal functions of music, whilst ignoring more collective, social aspects of musical experience (although this certainly is not reflected in the findings of the ATFF). Much of the psychological literature assumes music listening is an individual practice being experienced alone (i.e. Sloboda’s pharmaceutical model criticism, and portable listening studies generally), both of which appear somewhat antithetical given the proliferation of research identified that considers the social functions of music. Nevertheless it

Social (157)
Approval (15)
Boundary Demarcation (5)
Communication (13)
Control & Conformity (14)
Group Identity (17)
Interaction & Bonding (55)
Maintain/Express Values (4)
Surveillance (1)
Symbolic Representation & Difference (15)
<i>Meta-domain function references (18)</i>

would be remiss to suggest that music is not a socially communicative medium (Bryson, 1996, p. 885) (although the specifics of what are being communicated are difficult to parse) and often the very essence of musical experience is tied up with the social experience of music (Crozier, 1997, p. 67). On a very basic level, the social implications of a music event can provide a group or public experience, which, by its very nature, is a social experience (Hesmondhalgh, 2013, p. 2).

When examining Merriam's original taxonomy, over half the instances of musical functionality arise in communal contexts (Merriam, 1964; Sloboda, O'Neill and Ivaldi, 2001). Music certainly performs important functions for individuals and groups (Clarke, Dibben and Pitts, 2010, p. 77) and is almost always to a degree a social experience (Giles *et al.*, 2009, p. 293). In a broad sense music performs two basic tasks: relating the individual to the wider group, and defining the individual as a separate entity to the group through the construction of identity and values (Giles *et al.*, 2009, p. 296) and this is reflected in the separation of domains within the ATFF. The social aspects of music are entirely tied to the inter-personal and intra-personal presentation of self (Merriam, 1964; Hargreaves and North, 1999; Boer, 2009), the latter has been isolated as the identity domain. Clarke, Dibben and Pitts (2010, p. 98) bring to the fore the question of music as a social force: something that is invariably tied to the formation of cultural capital, and the establishment of social norms. There is always a tension between the group and the individual, between conformity and deviancy, between the many and the one, and that the functions of music (from a social perspective) aid in navigation, amelioration, or exaggeration of this tension. Perhaps the most appropriate phrase in this respect would be "negotiation" with those who are present in the listening context (Greasley, 2008, p. 211).

Although the social domain is not the most frequently occurring domain, or the domain that contains the widest variety of functions, it contains the single most frequent function in the entire taxonomic framework (the *Interaction & Bonding* function) excluding the meta-domain. Given this it is clear that, from a scholarly perspective at least, the social implications of musical function are of great interest and importance. The following describes each function identified within the social domain.

i. Approval & Cultural Capital

Taste may be one of the most problematic aspects of any musicological or ethnomusicological research regardless of epistemological approaches. Any culture or sub-culture makes

apparently arbitrary distinctions as to what is, or is not, tasteful. Bourdieu's concept of cultural capital (Bourdieu, 1986) allows individuals with aligned tastes to garner some approval or social capital from within a group. "Musical preferences are subject to social influence" (Crozier, 1997, p. 70). It is reasonable to suggest listeners attempt to garner approval from the wider group by imitating taste behaviour, and mediating their own tastes against those of the taste culture which they inhabit. This mediation may be observed in social situations where individuals demonstrate their taste and attempt to garner group approval, such as official or religious functions, social contexts, and situations where the social element is present to observe the behaviour (Clarke, Dibben and Pitts, 2010, p. 18). There is discussion within the literature of listeners "co-ordinating" their listening with others (Gomart and Hennion, 1999, p. 225), and Greasley (2008, p. 211) reports specific instances of this behaviour in their study, particularly concerning "negotiation" of listening material.

Yet, the work of Bourdieu implies an insincerity on the part of the listener. It suggests listeners 'water down' their tastes to match others, or simply falsify what they find appealing in order to gain approval. Whilst this may be the true in some cases, it also infers the alternate position. There are also examples of music directly contravening taste parameters set by large social groups as individuals attempt to distance themselves or court disfavour from particular social groups. This combative behaviour may also be an attempt by individuals to assert a new form of taste parameter on the group, but this can only be achieved if the listener is in a position of control, or is considered an elite by the social group. The very act of listening in a visible space, or acquiring the knowledge associated with certain musical forms or genres, is an act of presentation (something very much associated with Bourdieu's perspective). Not only the sonic materials, but the physical medium of listening (MP3 players, personal devices, and the recent resurgence of vinyl record players) can be purposive and actively engaged consequences (Krause, North and Hewitt, 2014, p. 315) of individuals electing to present their listening in an attempt to acquire cultural capital.

It is also conceivable that approval can be garnered for individuals through a "display of resources" (Dissanayake, 2006, p. 48) such as a materialistic expression of their taste. A criticism levelled against music since the development of the phonograph is that music recorded and sold is music devalued (see Paddison, 1982; Levin, 1990; Paddison, 1993). Whether this represents a cultural devaluation or monetisation is not our concern, but rather that music *did* become a commoditised product. Beyond the function of music to gain cultural

capital is the concept of music as a product. Whilst music collection became a way in which individuals could garner cultural capital (Zolberg, Bourdieu and Nice, 1986) it became something that, like all goods, cultural or otherwise, could be bought, sold, and traded (North, Hargreaves and Hargreaves, 2004). These owned recordings can be a source of cultural capital in themselves (Bergh and DeNora, 2009, p. 108), and as such can be traded for further capital and as a bonding or communicative experience (Levin, 1990; Taylor, 2014).

Finally, especially given the recent renewed interest in record collecting (Forde, 2015) it is also feasible that music can, in some instances, be a worthwhile investment from a financial perspective. Whilst, like any cultural commodity, this is equally true for music, it is not particularly enlightening when considering the act of listening.

ii. Boundary Demarcation

The concept of boundary demarcation runs concurrently with the ideas presented in the *Environmental Control* function. Personal devices can act as a wall or obstacle for others to perceive, and create a sense of separation from a physical location and others in that space (Bull, 2000; Williams, 2004). In this sense a Walkman can be a spatio-phonic weapon employed as part of a strategy of urban defence, the repulsive power of sonic force (Goodman, 2009, p. 11). It is a barrier against the outside world and, most importantly, visible to those around (Thibaud, 2003) that creates an “auditory bubble” for the user (Heye and Lamont, 2010, p. 111). Often this behaviour is perceived as anti-social (in the sense that one wishes not to interact socially, rather than suggesting delinquency) and listeners actually strive to achieve this (Hosokawa, 1984; Chen, 1998), regardless if become part of the “lonely crowd” (Riesman, Denny and Glazer, 1950). The visual symbolic act of blocking one’s own ears could be considered a signal to others and a rejection of the social realm in which the user exists.

Beneath the assertion by Bull and Williams that boundary demarcation is at least in part visible, is an implicit point concerning the proliferation of listening devices. Headphones have existed in some form since the 19th century (see Sterne, 2003), yet only since the late 1970’s and the introduction of the Walkman, has the visual symbol of headphones come to represent personal music. The visual quality of headphones in a public space acts as a signifier to all those around the listener that interaction is not desired or required. Williams’ suggests headphones are signals of disengagement to non-listeners that the individual may not wish to engage with their environment on some level and is an outward sign of internal separation.

iii. Communication

The concept of musical communication is a difficult area, and one fraught with inaccuracies and interpretation. The concept of music as a language is a conceptually misleading, as it is not possible to communicate without a standardised scheme of meaning (which music lacks). Although Merriam's initial taxonomy (1964) includes *Communication* as a function, even Merriam's description is unhelpful in defining exactly what music can communicate, as is the manner by which the indefinable meaning is communicated (Martin, 1996, p. 25). Hargreaves and North's (1999) analysis of Merriam proposes that music cannot be interpreted outside of the appropriate social context, which imposes borders (cognitive, social or geographical) on music's ability to communicate.

Musical communication is limited in the extreme by even Merriam's own description. His final word on communication is rather damning: "of all of the functions of music, the *Communication* function is perhaps the least known and understood" (Merriam, 1964, p. 223). It appears little has changed in the subsequent half century. One exception may exist as a third-party function in the form of compilations and musical gifts. Giles *et al.* (2009, p. 292) suggest that mix tapes are one way of communicating emotions through music, however, to what extent this is determined by the relationship between the individuals concerned again effects the transmission, reception and interpretation of potential meanings held within the music (and possibly a reliance on lyrical content over the musical qualities of the audio).

It may also be possible that music is capable of communicating emotional concepts to an audience from a performer, although this is somewhat a matter of subjective interpretation and would best be approached using Hargreaves, MacDonald and Miell's (2005) original Reciprocal Feedback Model. A final finding from within the references coded under this function highlights the prevalence of music as a conversation area. It is a socially accepted "topic of conversation" (Gantz *et al.*, 1978, p. 87) and something to be discussed amongst friends (Christenson and Roberts, 1998, p. 44). Although this is not the typical manifestation of the *Communication* function, it is certainly possible that music may fulfil this function, particularly amongst friends, groups and intra-group interactions.

iv. Control & Conformity

Ideas of control and conformity were referenced 14 times in the ATFF analysis with quite specific phrases including “conformity and compliance” (Brown and Volgsten, 2006, p. 21) and “social control”, “behaviour modification” and “organisations messages” (DeNora, 2000, p. 20). Conformity has been shown to be a driving factor when engaging with music for individuals within groups, especially with respect to music preference and selection behaviours (Hargreaves and North, 1999). Given that shared musical preferences and values are important for forming and maintaining groups (Hargreaves and North, 1999), it stands to reason that selection behaviours and tastes are mediated by the presence of others (Greasley and Lamont, 2011, p. 47) and that these actions act as methods of interpersonal affirmation and validation (Gomart and Hennion, 1999; Boer, 2009). Individuals employ music to send messages to others about themselves; how they wish to be perceived, and how they wish to interact with the group at large (Rentfrow and Gosling, 2003; Chamorro-Premuzic and Furnham, 2007). These messages are culturally specific, and generally subjective and ambiguous to those beyond the group (Kassabian, 2013). The result of conforming for listeners is generally agreed to be some affirmation of belonging or social capital, and such belonging may be recognisable to external parties beyond the group.

However, it is possible that conformity can be placed upon groups or individuals from other sources such as propaganda from governments (Mussulman, 1974, p. 126). Functional strategies of conformity can be used as resistive materials also, as using music to establish power-bases in public spaces is another strategy that reflects an inverted use of the function, but still ensures individuals align and conform to the resistive use (O’Hara *et al.*, 2006). DeNora (2000) suggests that music can remind individuals as to appropriate modes of action for a specific situation signalled through musical materials, and that conforming can reflect a “desire for acceptance into particular social groups” (Hargreaves and North, 1999, p. 79).

v. Group Identity

“Music allows for real-time shared group identities to be built” (Bergh and DeNora, 2009, p. 111). The very nature of music is social and symbolic (Bryson, 1996) and can be used to align individuals together into groups. Given that music is capable of containing values, or can at the very least be perceived to do so, it becomes a totem or expression of various social values (Clarke, Dibben and Pitts, 2010, p. 18): a means via which groups can bond. Aligning oneself with music sends representational signals to others (du Gay *et al.*, 1997, Laiho, 2004) around

which groups can form. The very existence of musical sub-cultures is evidence for this as a function of music. Not only do said groups align around music, but musical sub-cultures are, quite literally, cultures *about* music. Values are expressed using music and, for the cultural participants, values are encoded in the music. Given the universality of music it is an approved topic of conversation in most cultures, allowing for interaction, and facilitating social interaction (Lonsdale and North, 2011, p. 123). It is possible that music also contains certain qualities that allow for social development and improvement as groups develop (Nuttall, 2008, p. 109), and shared musical tastes have an important role in forming and maintaining friendship groups (MacDonald, Hargreaves and Miell, 2012, p. 463).

Giles *et al.* (2009, p. 294) point to the connections between music and national identity. National anthems and traditional musics hold information and represent aspects of culture as emblematic constructs. Groups use these as a source of collective identity (Wallis and Malm, 1990; Boer, 2009). This identity is also a scalable construct; geographical regions and borders also maintain musically distinct styles that can become microcosmic within countries and cultural groups. In the manner in which Cumbia is emblematic of Colombia (see D'Amico, 2013), or Flamenco is representative of Spain (see Washabaugh, 2016), some cultures can still be tied to distinct, smaller geographies. Heavy metal can be connected with its roots in Birmingham (see Harrison, 2010), or House music with Chicago (see Maloney, 2018). These totems can be pronouncements of culture, but also a manner of interaction against different cultural backdrops (Shankar, Elliott and Fitchett, 2009, p. 87). In these instances, music can be considered an ambassador of culture, rather than culture itself.

In addition to reinforcing a sense of location music can also transcend geography. It is capable of reinforcing the identity of groups disconnected with their traditional location or homeland (Chambers, 1994). Diaspora communities can reconnect with their identities through the use of traditional or cultural musics (Williams, 2006, p. 51). Whilst not discussed in the literature, it may be pertinent to draw attention to ideas of cultural cross-pollination that may occur from such diasporic communities that may, in and of themselves, create new group identities through music i.e. the 'Windrush Communities' of the late 1940s - 1960s are arguably the progenitors of 2nd generation Ska, the development of which created entirely new musical sub-cultures. It is highly likely that these first two forms of group identity (reinforcing location and transcending geography) exist in symbiosis with one another.

vi. Interaction & Bonding

The most frequently occurring function in a single domain in the ATFF analysis is that of *Interaction & Bonding*. References to this function were the most frequent in the aggregate body with 55 unique instances. It is interesting to note that this singular functional behaviour was almost as common in the analysis as the entire identity domain (65 total references within the identity domain).

The range in terminology applying to this function was incredibly broad. Phrases included “socialising” and “belonging” (Bennett, 1999, p. 606), “social play” (Brown and Volgsten, 2006, p. 5) “social utility” (Laiho, 2004, p. 50) and “social actualisation” (Packer and Ballantyne, 2010, p. 166). A great many specific activities can fall under this large functional label, but each reference in some way aids in group cohesion and interaction. These may include “conflict resolution” (Brown and Volgsten, 2006, p. 5): employing music to articulate and mediate intra-group conflict between individuals or factions of a group, although references mentioning combative aspects of the group dynamic are much less frequent than those suggesting cooperative or cohesive aspects.

As with the creation of a group identity, taste and conforming is an important influence in the manner in which these bonding strategies occur. Taste may be one of the key factors in maintaining groups and friendships (MacDonald, Hargreaves and Miell, 2012, p. 463) and allows specific individuals within the greater whole to maintain their positions (Nuttall, 2008, p. 107) by facilitating interpersonal interaction (Lonsdale and North, 2011). Having shared musical tastes may “intensify bonds” between listeners (Boer, 2009, p. 224).

Hargreaves and North (1999, p. 71-72) suggest music only serves three overarching purposes, one of which is to facilitate interpersonal relationships. However, it is also feasible that this is due to music’s ability to engage emotional states and align a group’s emotional state giving them greater cohesion within the group (Clarke, Dibben and Pitts, 2010, p. 105). Clarke, Dibben and Pitts suggest specific neurochemical compounds (oxytocin) are released during listening; this compound is particularly associated with social bonding and enhances group cohesion as a result.

In broad terms, it is possible to suggest that some aspects of this social interaction may be socially or culturally context-dependant. Groups may have different ways of engaging with

music for this function, and such behaviours would have to be studied ethnographically rather than from a conceptual framework of function. It poses questions as to how individuals perceive each other within groups, their roles, their power dynamics, and, also what exactly is implied by words such as “bonding” and “cohesion” from members of the group. It is fair to say music is an important behaviour or function when groups (especially cultures *about* music) come together but the specifics of how individuals bond around and through music is unclear. As groups are a collective of individuals it may be that the idiosyncratic listening behaviours most individuals display are in play here also. It may never be feasible to fully and accurately conceptualise this function, as we can never truly conceptualise the individual and their connection to other group members.

vii. Maintain & Express Cultural Values

Only four instances of this function were found within the aggregate body, implying that perhaps this function is not as clear to many listeners as the more individualistic variations of the concept (see identity domain). This function employs music as a signifier to society as a whole from within a group to display specific cultural values. The example of ‘PLUR’ within the EDM community (see Lorenz, 2014) is particularly apt here. Musics within the culture promote ideas of peace, love, unity, and respect (PLUR) through lyrics, titles, and group behaviour, to be observed by outsiders to the community and to maintain the culture’s own values and history (Lorenz, 2014, p. 5). This collective identity expresses cultural values (Frith, 1996) through its musical materials. This function is somewhat mirrored in Merriam’s original taxonomy as a “symbolic expression of social and cultural values and identities” (Boer, 2009, p. 192). Tekman, Boer, and Fischer (2011, p. 374) point to rock music as a particularly important style for expressing values. The music materials are a signifier of that community (Bennett, 1999) and one of the ways in which the community signals itself to the outside world. Through the lens of this behavioural strategy cultural and sub-cultural musical materials can be conceived as auditory flares sent out into the world with the dual functions of highlighting the existence of the community to outsiders and reinforcing the values of that community.

This functional area could be perceived as an extension of the *Group Identity* function as without a pre-formed group identity there are no values or messages to express, or recirculate within the group. It is simply a matter of displaying functional behaviours that already exist, but that display *is* a strategy of music employment. Hence, by the same logic, it should be considered a functionally coherent behaviour.

viii. Surveillance

Only one instance of this function appears in the ATFF analysis and is barely represented within the literature at all. However, given the contemporaneous realities of the celestial jukebox (see Hatch, 1995; Goldstein, 2003; Kusek and Leonhard, 2005) we may indeed be surveilling musical listening in order to achieve perceived control or understanding of individuals and groups. The reference within the analysis (Lonsdale and North, 2011) offers little investigation into the function. However, our listening is certainly being tracked by services such as *Spotify*, *Tidal*, *Apple Music* and *Pandora*. Spotify releases a great deal of information on its users listening statistics through its ‘insights’ web pages, and services such as *Next Big Sound* offer access to big user data to allow others to track listening trends and patterns.

This surveillance can also occur on a personal or social basis, rather than in large groups using social media-type functionality built into many of the services listed above. It is possible to follow *friends* and observe their listening in real time, access their personal playlists, and follow their personal listening behaviours. At the time of Lonsdale and North’s paper these services were relatively new, but as time passes it would stand to reason that these surveillance behaviours increase, and we may see a greater importance placed on these strategies from individuals, groups, and corporate entities.

ix. Symbolic Representation & Difference

As music is employed within contexts and conventions, music has the potential to prompt listener behaviours (DeNora, 2006). Inherent within this concept is the potential for an individual to position their agency in opposition to the cultural or contextual norm. Boer (2009) suggests individuals perceive each other as group members, hence music can be used to include and bond, or to exclude (Nuttall, 2008; Boer, 2009). As a result, listeners may purposely employ music to ‘go against’ the group.

Tekman, Boer and Fischer (2011) suggest that certain music genres (in this instance ‘rock’) are important for expressing values. Yet, music being labelled as deviant (Mulder *et al.*, 2006, p. 315) by groups has many implications for the individual and intra-group relationships (expressing a deviant music choice). This vulgar or deviant music represents escapism from “the system” but is, in actuality, a futile protest (Stivers, 2007, p. 134). Others suggest that deviant music in group contexts is symptomatic of stunted development (Mulder *et al.*, 2006),

although this view is arguably outmoded. Defences for deviant and vulgar music are distinctly lacking from the discourse generally. Regardless, the strident opposition to it within the literature implies it certainly has an effect in terms of its functional purpose. From the inverse perspective, dissent through music allows groups to exclude individuals, if only on a symbolic basis (Bryson, 1996). Cultural distinction (along lines of music and cultural capital) allows for the rejection or exclusion of anything labelled other (Bryson, 1996; Shankar, Elliott and Fitchett, 2009). The same musical materials that allow for social integration and cohesion are those which also allow for cultural resistance and exclusion.

Furthermore, it is possible that music can be symbolically representative of not only groups, but wider themes or concepts. The notion of a canon is particularly useful here, with music acting as a symbol or totem of such materials that make up a particular canon. Certain pieces of music are synonymous with genres, scenes or periods, and thus the elected listening material connects the sonic artefact with the larger canon and interrelated scene, genre or period. This listening material can then, in turn, be considered something to engage with or reject (inferring an acceptance or rejection of the connected canon and its associations) in accordance with the group behaviour outlined above. Arguably, established canons are also representative of an entire group's identity and ideology and their acceptance or rejection of the materials may refer to entire groups of people and their inherent ideologies.

4.7.7 The Identity Functions of Music

The arena of the social is a series of interactions between an individual and the group. Hesmondhalgh (2013, p. 2) believes music “represents a remarkable meeting point of two intimate and social realms”. As such, music fulfils functions not only for the group as a collective whole, but also for individuals within it and said individual's relation to themselves. A great deal of the literature examining listening makes the assumption that listening is a solitary activity (Boer, 2009). Greasley and Lamont (2011) found 54.9% of the listening episodes they studied occurred when participants were alone. This individual listening is particularly important for adolescents (Saarikallio and Erkkila, 2007) and is drawn into use for functions relating to identity and the individual. This period of life can be considered to be the most impactful in terms of taste and musical preference (as examined in

Identity (65)

Create/Maintain Identity (12)
Express Identity/Values (14)
Personal Development & Understanding (21)
Promote Autonomy & Agency (12)
Symbolic Representation & Difference (6)

Meta-domain function references (0)

Holbrook and Schindler's (1989) landmark study of taste plasticity and age), and is an integral element and expression of identity formation.

The identity functions of music often reinforce aspects of an individual's relation to the larger social group but can also be used to develop differentiating elements of identity that directly contravene aspects of the social. A great deal of the functions explored in this, the least referenced of the ATFF domains (only 65 references from within the aggregate body), are concerned with identity; creating, expressing, displaying, and reinforcing it. Hence the domain is termed **Identity**. However, as a result of the lower incidence of data in this area it is not possible to expand the possible functions in some instances beyond broad suggestions and conjecture. The separation of this grouping is also apparent when considering no functional references from the identity domain were connected to **Meta-Domain** functions. It would appear the identity functions of music are very much segregated from the main body of musical functionality. The following describes each function identified within the identity domain.

i. Create & Maintain Identity

Marc Augé (1995) is quick to point out that group identity is, like individual identity, in a constant state of flux, and these two domains are increasingly interdependent in contemporary society. It is possible to perceive this in three distinct directional perspectives: the identity of self, the identity of groups, and the identity prescribed by outsiders (Hargreaves and North, 1999, p. 73). Much of the work examining the functions of music for individuals places strong importance on the interrelatedness of music and identity. It can be considered the “soundtrack to everyday life” (Giles *et al.*, 2009), and such general ubiquity must be symptomatic of some kind of functional benefit to us. Further evidence points to the nature of music becoming not just a behaviour, but enmeshed in our everyday lives (DeNora, 2000; MacDonald, Hargreaves and Miell, 2012), and that references to music and the construction or perception of self are overt and numerous within the literature.

Many believe music is an important means through which listeners form identity (DeNora, 2000; Bensimon and Gilboa, 2010; Lonsdale and North, 2011). Three references within the analysis specifically refer to “identity formation” (Jensen, 1995; North, Hargreaves and O'Neill, 2000; Laiho, 2004). Particularly in adolescence, music is seen as an important factor in developing and maintaining identity (MacDonald, Hargreaves and Miell's 2012; Zillmann and Gan 1997; Nuttall 2008, Laiho 2004). DeNora (2000, p. 162-163) suggests the music is more

than stimulus, rather it provides the cognitive “building materials” through which listeners construct identity, rather than MacDonald, Hargreaves and Miell’s (2012, p. 462) assertion that it is merely an “influencing” factor. Miller (2004) suggests a third approach, beyond that of material or influencer, offering the view that music is capable of creating a state or environment in which identity work can occur. Most importantly, the function may not be one where instantaneous are felt, rather they may develop over extended periods of listening. Identity creation is a longitudinal process. As such, listening to music does not allow one to develop identity ‘overnight’.

There is evidence to suggest that music is prized above all other activities in adolescence, giving it a privileged position from which to influence listeners (Zillmann and Gan, 1997). By engaging with music styles in an omnivorous manner it is possible that identity is as varied as the music that aids its formation (Miller, 2004). There may be reasons why identity could be mediated or renegotiated by social influence and music, but there is little direct evidence detailing this (although it stands to reason that it could, especially when observing social or cultural norms within groups). Music also allows us to retrospectively explore our own identities (Shankar, Elliott and Fitchett, 2009). The lasting, longitudinal nature of recorded music enables re-examination of the self through the prism of memory, or as DeNora (2000, p. 69) suggests a “mirror for self-perception” that can be a reminder of our previous selves. This memory work is directly connected with autobiography, and could be considered a direct link to one’s own past through the use of music (Bensimon and Gilboa, 2010). Whilst identity work is generally discussed as an incremental construction, re-examination allows for reappraisal and re-contextualisation of the past. However, that is not to say identity is not something that music can help to maintain (Bull, 2001).

There may be multiple methods used to build our identity, but the process is not described within the literature. It may be individuals using music as an object to orient themselves within the world or within ideological concepts or using music as a stimulus to mimic. DeNora (2000, p. 16) suggests music can be used to “sustain ontological security”, aligning ourselves to objects that represent our (desired) internalised ontology and reinforce those notions. These identity functions are likely related to many of the other functions within the identity domain, and all the functions within the domain may represent segments of one large ‘super function’ of identity work. However, compartmentalising the material into specific functions allows for greater depth and delineation of the potential impacts of this area of study.

ii. Express Identity & Values

We now carry our auditory identities in the palm of our hand (Bull, 2006, p. 131) in the form of a portable musical device. Just as aspects of an individual's behaviour, dress, and speech can be an expression of identity, so can the musical materials an individual employs. There are obviously strong connections to notions of sub-cultural belonging here, but these auditory signals can offer a means for expressing individual identity also. Music is a means for expressing identity (Bensimon and Gilboa, 2010, p. 173) and self-representation (Shankar, Elliott and Fitchett, 2009, p. 78). Shankar, Elliott and Fitchett (2009) also go as far as to suggest that record collections offer a prime example of this representation. These physically manifest collections are a display of identities past and present and represent an ongoing process of identity development through expression. These collections also allow individuals to investigate and represent older incarnations of identity making it plain to themselves and others; they are tools for retrieval.

This function of music is a means to express individual attitudes and values. As with many of the functions within the identity domain, this function must occur in some relation to a wider whole of the social. It is only through separation from the group than an individual can display identity, and the intricacies of their expression may only be understood when compared to the wider collective (i.e. Derrida's 'otherness'). While the notion of expression would seem to be related to a social group (which is certainly is), the individualistic expression of values can occur without recipients and without orientation to the social. Rather, it can be an expression of and for the self. Furthermore, it can potentially be a signal of difference or separation from the larger group. Tekman, Boer and Fischer (2011) posit that music preferences are associated with personal value orientations. These choices in themselves may offer a manner for individuals to express their attitudes and values. Within the aggregate body there are 11 references to this function, making it one of the most consistently represented function within the identity domain.

iii. Personal Development & Understanding

This function certainly resonates with concepts of *Identity Creation* and performs many of the same roles for individuals. Indeed, it may not even be possible to draw a dividing line between the two. However, within the literature there is the suggestion that identity refers to the sense-making portion of the functions, whereas *Personal Development* refers more to learning and

conceptual development, as well as the inference of ideological development. Packer and Ballentyne (2010, p. 166) perhaps best summarise the area as “personal growth”, suggesting that development functions are concerned with maturing ideologically. Hargreaves and North (1999) point to the ubiquity of listening as a constant source of personal development; listeners learn from the soundtrack to everyday life (Levitin, 2007). Nuttall (2008) further reinforces the concept of maturation and development, suggesting that musical narratives may be a place where individuals can learn and develop understanding. It is likely that these functions are enclosed within the much larger field of identity creation and this could be considered a smaller sub-function or a facet of the wider field of identity.

Little further discussion of this functions exists within the literature, although it is possible that it connects strongly with the *Promote Autonomy & Agency* functions. It is possible that this function is not restricted to one individual listening episode and may, like other identity functions, manifest over an extended period of use, allowing listeners to develop a greater understanding of self.

iv. Promote Autonomy & Agency

It is possible to view this function as the inverse of *Control & Conformity* functions. Music can act as a tool that allows individuals to create some sense of agency or autonomy, against what they see as “agency demanded by particular circumstances” (DeNora, 1999, p. 38) or boost an individual’s ego (Elvers, 2016b). It can allow individuals the “autonomous experience of the individual listener as agent” (Hargreaves and North, 1997, p. 380; Sloboda, 2005b). Within the aggregate body numerous references speak to “agency” as a function (see Laiho, 2004; Laukka, 2007; Packer and Ballentyne, 2010; Ruud, 1997). The concept appears to be a simple assertion that an individual feels in control when they are able to listen; choosing and listening allows listeners to gain a sense of autonomy. This may be a function that ties strongly to experiences of adolescence, allowing non-emancipated individuals some control in prescriptive parentally-controlled environments.

This function may also tie closely with the *Create & Maintain Atmosphere* function by enabling individuals control over modes of action within social situations. It is control imposed by the individual onto the outer world, rather than the individual being subject to musics attempting to control them as with *Control & Conformity* functions. Finally, it has been suggested that reinforcement of one’s own ontological grounding can be an important facilitator for wider

social interaction (see Groarke and Hogan, 2018), although the specifics of how music may facilitate this is not investigated.

v. Symbolic Representation & Difference

The social functions of music for groups can be perceived as directly affecting the individuals within that group, none more so than differentiating individuals from the group. Beyond *Identity Creation and Maintenance*, music is often used as a means of display (Bergh and DeNora, 2009, p. 111), offering physical evidence of the intrapersonal to the wider group. It is the internal autonomy of the individual (Sloboda, 2005a) on show for all to see. For the individual the musical activity of listening is inextricably linked to identity and perception (MacDonald, Hargreaves and Miell, 2012, p. 462), and perception from the group at large is mainly based on the arbitrary schema of musical taste and conformity suggested by the subjectivities inherent in the group (Merriam, 1964). Given this, representation can only occur in relation to a group, and the meaning that is represented or displayed is only of relevance to that cultural group (Merriam, 1964; Hargreaves and North, 1999).

Music, and its associated meanings, is a means by which listeners can augment themselves with further meaning. It is an auditory tattoo that carries semiotic values with it (DeNora, 2000). This meaning, as suggested by Merriam (1964), is a purely social construct (Clarke, Dibben and Pitts, 2010, p. 74), and musical identities are as fluid as meaning within music can be. Even the act of identifying representation in another could be considered an act of representation within ourselves, depending on our response to the display, and as such representation is a psychological process we are all engaged with (MacDonald, Hargreaves and Miell, 2012, p. 469) in an on-going process of identity work.

As with identity expression strategies, this function specifically transmits messages to groups from the individual (Chamorro-Premuzic and Furnham, 2007; Rentflow and McDonald, 2011). Whilst it impacts upon the social group, the locus of the function is for and upon the individual (making it an individual function rather than a group one). It is also possible to suggest that music can literally become a stand-in or replacement for individuals when they are absent, and can offer representation on behalf of the individual.

4.8 Reciprocal Feedback Model 4th Iteration

Previous iterations of the Reciprocal Feedback Model included changes to the model that incorporated notions of use, function, and mechanism. These previous iterations fully described music-facilitated goal attainment for listeners; including the contextual variables that may influence listening (situation, listener, music), an exploration of the goals of individual listeners and placed Merriam's definitions at the centre of the model. However, with the ATFF study identifying such a wealth of possible functions, these have now also been included in a new iteration. The focal centre of the fourth iteration of the Reciprocal Feedback Model (Figure 19) explicitly references the functions identified in the 'Aggregate Thematic Functions Framework'.

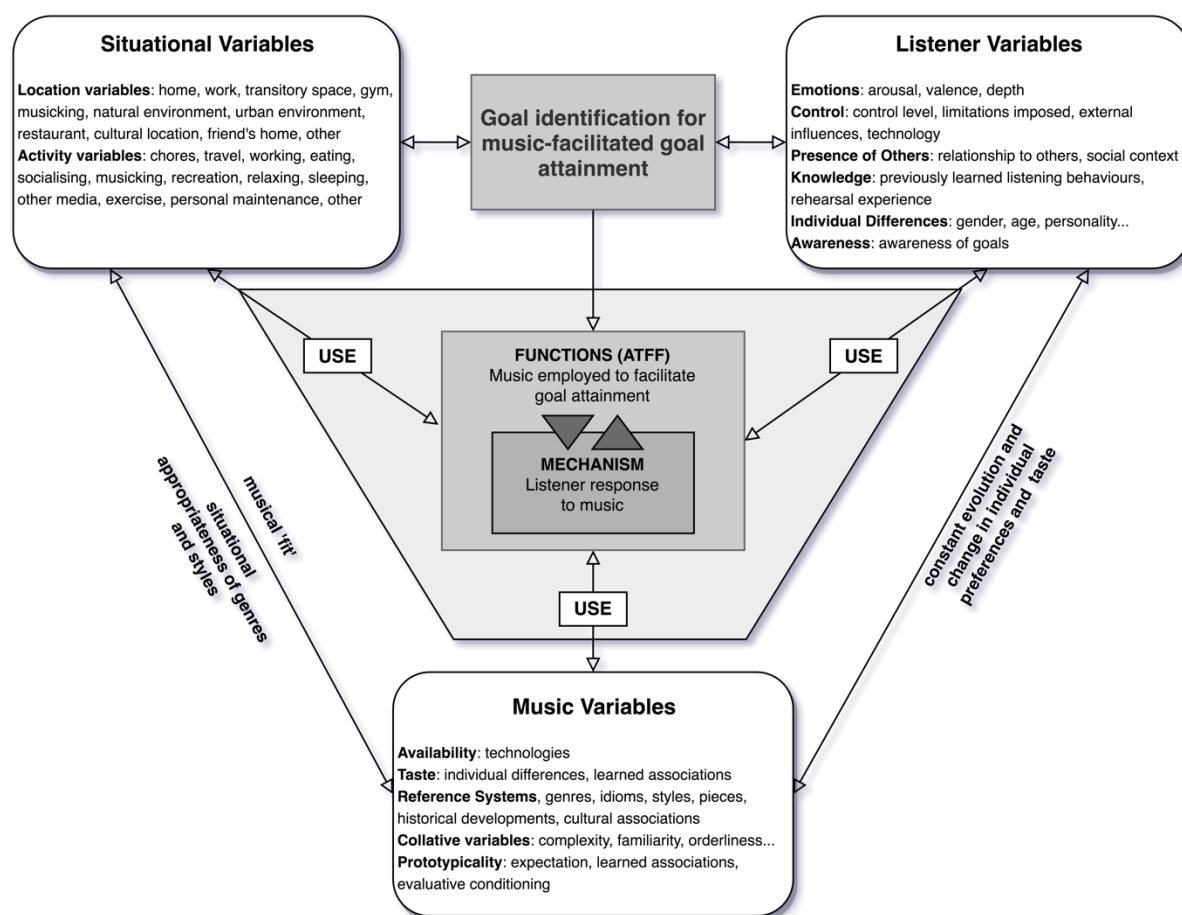


Figure 19 4th iteration of the Reciprocal Feedback Model including the ATFF

The list of functions and their associated domains of action has not been included within the model to reduce visual complexity. Whilst this alteration to the model is not particularly visually striking, it actually represents a significant body of complementary theory that should now be considered part of music-facilitated goal attainment processes.

4.9 Aggregate Thematic Functions Framework: A Summary

This study has presented the methodology, analysis and discussion of the functions of music as they exist within the research literature. As such, the ATFF is the most extensive collation of research into the functions of music currently available. The taxonomic framework, derived from a qualitative thematic analysis, offers a pseudo-consensus between the various research performed into the field, and presents a visual representation of the various functions. Each function is discussed in appropriate depth and shows both the similarities and divergence within the current body of research. The taxonomy also compartmentalises functions into broader domains of action; namely, the aspect of the self that is operated on or augmented by functional listening. Furthermore, it also highlights areas of liminality between such domains, drawing attention to functions that are not necessarily restricted to one domain of action i.e. the meta-domain. Most importantly, the ATFF represents a consensus between all the currently extant research into the functions of music. It is arguable it represents the most granular (previous studies have contained up to 39 functions) conceptualisation of the area (the ATFF contains 45 functions). As such, the ATFF has shown it is possible to create and fully describe a consensus taxonomy of the functions of music in everyday life from the extant research (Aim 2, Objective 4). The work has also continued to refine the Reciprocal Feedback Model, bringing novel data to bear in its structure and the variables it contains (Objective 2).

However, although the ATFF presents the current accepted theoretical, scholarly conceptualisation of the functions of music, it does not purport to be representative of real-world listening. A taxonomy such as this lacks any ecological validity and, owing to its theoretical nature, would misrepresent those studies that were drawn from ESM studies with considerable ecological validity. Owing to the mixed nature of the research used to generate the ATFF (both theoretical and experimental), some aspects of the framework cannot be representative of real-world listening praxis. Of particular note is the frequency with which individual functions and wider domains are presented within the extant research; these are in no way representative of the frequency of functions being employed within everyday listening. Such interpretations would be highly erroneous. Furthermore, owing to the limited quantity of studies based on experimental evidence, we cannot state definitively that the ATFF encompasses all possible functions of listening.

As such, steps are still required to check the parity, validity, and reliability of the taxonomy against real-world listening habits. Such activity would shed further light onto the everyday

employment of the functions of music, the contextual drivers for music-facilitated goal attainment, and allow some understanding of the possible frequency and appeal of some functions. The following chapters will explore the possible (dis)parity between the ATFF and real-world, ecologically valid listening experiences to parse the similarities and differences between a theoretical and experimental approach.

How can such comparisons be made? A methodology is required that would both gather ecologically valid data about listening, and allow it to be presented in a way that is readily comparable with the ATFF analysis. With this methodology in place it would then be possible to test the robustness of the proposed ATFF taxonomy in real-world scenarios (Objective 5). With the aggregate data collected through the ATFF study, and any potential new functions identified as part of the real-world study, it may then be possible to further refine and extend the taxonomy of the functions of music. By analysing and combining from both theoretical framework and real-world experiment it will be possible to refine a final taxonomic framework of music-facilitated goal-orientated (Objective 6).

5.1 Study 2: Experience Sampling Methodology Study

This is the story of how we begin to remember
This is the powerful pulsing of love in the vein
After the dream of falling and calling your name out
These are the roots of rhythm, and the roots of rhythm remain
- Paul Simon “*Under African Skies*” (1986)

The ATFF taxonomy presents the broadest and most exhaustive picture of the currently extant theory concerning the functions of music. Although some studies included within the analysis draw on real-world ecologically valid evidence of functionality gathered from participants (such as Sloboda, O'Neill and Ivaldi, 2001; Laukka, 2007; Greasley and Lamont, 2011; Sloboda, Lamont and Greasley, 2012; Juslin *et al.*, 2016), many of source publications used to generate the framework were theoretical in nature. The ATFF presents a picture of the functions of music within the literature but can in no way be representative of the habits of typical listeners. It also presents the academic view of the details of functions, combining the qualitative data provided by the literature into a series of descriptors of functions. Hence, the first study offers two features: firstly, a conceptualisation of the *possible* functions of music, and secondly, a detailed analysis of the published research in the field. Therefore, the question remains as to how to compare the ATFF to the ‘true’ experience of listeners.

The ATFF does not offer an insight into real-world listening. It does not capture the nuanced of functional listening or purport to represent an accurate picture of listening. It merely expresses the extant state of research. As such, issues remain as to how to ensure the robustness and validity of the ATFF. How can the ATFF be compared to real-world listening? What changes would be made to such a taxonomy if real-world listening data were available? Furthermore, how can real-world listening data inform our understanding of the details of functional listening?

5.2 The Problem of Parity

With the ATFF established, there is a noticeable disconnect between the theoretical framework and real-world experience. A body of evidential data is required to allow comparison of the ATFF to the experience of listeners. However, there is no available dataset that i) includes the data from which to infer the functions of music in operation in everyday listening episodes, ii) is readily accessible and in a format fit for analysis, and iii) is contemporary enough to capture evidence of current technologically augmented listening methods (e.g. mobile streaming).

Therefore, generating a dataset from which to allow for comparison was the next necessary step towards addressing questions of current practical music-facilitated goal attainment listening.

Thankfully, recent studies into the functions of music and more general listener behaviours offered a possible trajectory to gather this evidence. Recent studies (e.g. Juslin *et al.*, 2008; Greasley and Lamont, 2011; Randall and Rickard, 2013; Bailes, 2015; Krause, North and Hewitt, 2016) have employed experience sampling methodology (ESM) to gather ecologically valid data on listeners in everyday life. ESM allows relatively unobtrusive observations to occur and is grounded in listener experience, rather than placing a reliance on physiological measures of cognitive and emotional states (such as ECG and GSR). The data gathered in these studies may also be tailored to their requirements. Therefore, an ESM study provided the ideal methodology to address goal-orientated listening and the functions of music grounded in the experience of listeners. Furthermore, it allowed for aspects of the contextual triad to make themselves clear, furthering the relevance of the Reciprocal Feedback Model. Once appropriate data was gathered, it was then possible to compare the ATFF data to that obtained from real-world listeners. From this the similarities and differences between the theoretical stance of the ATFF and the practicalities of everyday goal-orientated listening could be identified.

The evidence collected required in-depth analysis and interpretation, following a similar methodology to that used in the previous bibliometric study. It was imperative to ensure that functional listening was questioned in the ESM study and questioned in a manner that was easily understandable to non-specialist listeners with no knowledge of the theoretical concepts of music-facilitated goal attainment and the functions of music. This data could then be interpreted in a manner similar to that of ATFF analysis (thematic analysis).

5.3 Study Design & Procedure

The following study addresses the functional listening that real-world participants engage in, with a view to confirming the validity and parity of the proposed ATFF through the use of ecologically valid data. The research performs a moderately sized experience sampling methodology study, gathering data from 71 participants over seven days. The results are presented as a visual taxonomy similar to the ATFF to aid comparison later in this research. In addition to this, detailed analysis of each function in turn is presented.

5.3.1 ESM Study Design

Experience Sampling Methodology (ESM) allows the observation of individuals “naturalistic behaviours” (Hektner, Schmidt and Csikszentmihalyi, 2007, p. 5) in their everyday environment. Requesting participants to complete diaries concerning their activity, thoughts, reflections, perceptions, feelings and responses to everyday stimuli removes the issues so prevalent in the pharmaceutical model (Sloboda, 2005a). Primarily, it reinforces ecological validity by allowing a naturalistic engagement with stimuli, rather than participants encountering stimuli within laboratory or overly restrictive or non-naturalistic conditions (Hektner, Schmidt and Csikszentmihalyi, 2007). ESM does bring with it some pitfalls, particularly concerning the subjective rating of experience. However, the accusations of distortions in ESM studies are generally restricted to smaller momentary variations in the participant (ibid.) and may occur in any context.

This study followed traditional ESM design (as discussed in Hektner, Schmidt and Csikszentmihalyi, 2007) and targeted the study at music listeners who are rated as ‘highly engaged’. It captured their experiences of listening and, from the data captured, identified the functions that listeners elected to engage with. It also captured information concerning the goals present in the context, the activity and situational factors, and additional data concerning their method of engagement and the efficacy of their engagement.

ESM Distribution

Older ESM studies employed diaries or pre-formatted paper forms to capture participant responses, resulting in many hours of manual collation and/or digitisation. Two pre-existing styles of experience sampling studies were particularly valuable in developing a newer experience sampling methodology. Firstly, Greasley (2008) and Bailes (2015, p. 58) demonstrated the use of mobile phones to send experience sampling form (ESF) requests to participants, upon which participants would complete pre-formatted paper diaries. Secondly, Will Randall’s MuPsych App studies (see Randall, Rickard and Vella-Brodrick, 2014; Randall and Rickard, 2017) have seen the removal of paper diaries and a reliance on portable devices that are now widely adopted.

Given what was learned from these experience sampling studies, and the prevalence of mobile data provision, it was decided to perform this study using SMS messages sent directly to participants with links to online forms (hosted in Qualtrics) that could be accessed on their

mobile devices. The system existed behind a firewall, was on the university's own servers and aligned with data protection policies, and was restricted to only a few users. The data could be expunged from the system immediately after the study was completed.

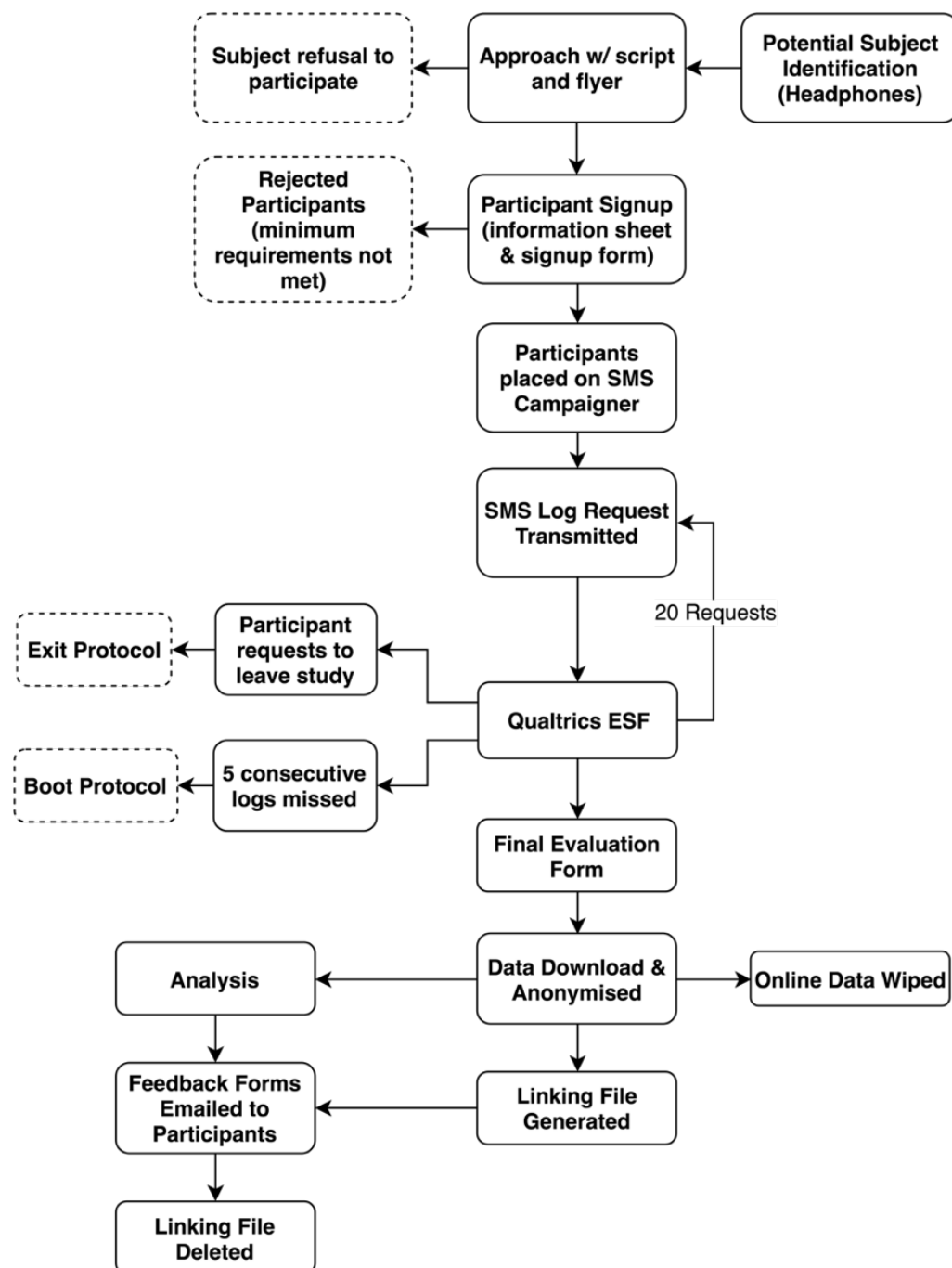


Figure 20 Flow diagram of the ESM study procedure

ESM Procedure

After identification and successful recruitment of participants to the study, participants were sent an email informing them of the start date of the experiment. Once the study began, participants were sent SMS messages containing their credentials and instructions for participation. These messages were sent three times a day at pseudo-random intervals (morning, midday and evening). The procedure lasted for seven days with 20 normal SMS messages requesting EFFs sent at the allotted time periods. The final SMS message (day 7, evening) contained a link to the evaluation form. This was also emailed to all remaining participants.

Upon completion of the study, all data anonymised, and participant contact details and entries removed from all online systems. A 'linking file' was generated that contained usernames and email addresses. Their responses were then analysed, and incentivised feedback forms emailed to those who requested them using the data in the linking file. The linking file was then deleted. Figure 20 presents a visual flow diagram of the procedure.

5.3.2 Measures & Questionnaire Design

Three online forms were generated. The initial sign-up form (see Appendix D) presented potential participants with an explanation of the goals of the study, explained the study conditions, a data protection statement, and presented each user with a series of consent statements to which they must agree. The remainder of the form captured demographic data (age, gender, employment) and contact details. Listeners were also queried about their listening habits and asked to rate their level of musical engagement on a 7-point Likert scale by agreeing with the statement "Music is an important part of my everyday life".

Concerning the main ESF entry form (see Appendix E), certain choices were made concerning layout and form logic; particularly pertaining to positive or negative responses to the opening question ("Have you listened to music since you last used this form?") to ensure individuals were not presented with questions that were not relevant. Further to this, additional logic was applied to those who stated they were not listening alone as these cases raised questions about the possible external influence of others. As such, the form offered several differing configurations depending on the responses of the participants (Figure 21). For those participants who have listened since their last entry, participants' situational goals and music selection processes were directly queried. Additionally, the extent to which they felt music

influenced their situational goals and why was questioned, as was their liking for the musical stimuli. These were presented as semi-structured free text fields with attached rating scales where appropriate. Participants' overall perceived awareness and effectiveness of goal-orientated listening was queried (on a positive/negative 11-point scale). Further to these questions, participants were questioned concerning aspects of listening contexts in a semi-structured free text field.

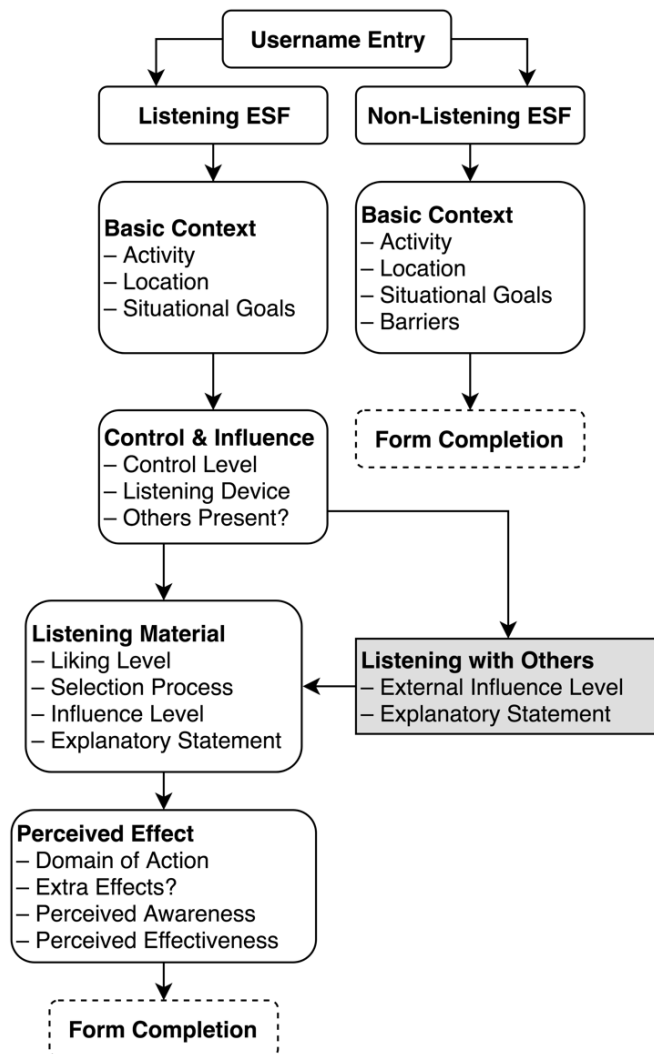


Figure 21 Flow diagram of the ESF logic

Participants completing entries pertaining to situations where they had not performed listening were presented with a much briefer form that questioned their location, activity and situational goals. These ESFs also included questions that explored why participants had not listened and whether listening would have hampered their situational goal attainment. It may be possible to infer barriers to goal-orientated listening from those who were not actively listening.

Finally, the final evaluation form (see Appendix F) queried technical aspects of the study experience and offered individuals the opportunity to report issues. The form also questioned aspects of their understanding of goal orientation processes concerning influence, efficacy and awareness. Finally, the form also queried whether listeners wished to receive their incentivisation feedback reports.

5.3.3 Sampling, Identification & Recruitment of Potential Subjects

Given one of the primary aims of the study was to construct the most extensive and detailed examination of the functions of music, candidates were ‘purposively’ sampled¹⁵ to have high levels of musical engagement. Whether this precludes some functions for those who were less engaged is not known, but is unlikely given Greasley’s research (see Greasley, 2008). Assessing musical engagement based on visual appearance rather than in-depth discussion was deemed to be the most efficient use of time and, as such, a visible signifier was required to identify potential study candidates quickly. It was believed that individuals wearing headphones/earphones while travelling and alone were likely to present a relatively high level of musical engagement, and that by listening they were likely to be engaging in a form of functional listening.

Identification of potential participants was primarily performed in two public spaces in the city of York, UK. Potential participants were approached with a flyer containing basic information (Appendix M) and a short, prepared block of dialogue (Appendix K). The script opened with a short question designed to facilitate dialogue with prospective participants. Further to this, the script explained the basics of the study, during which time prospective participants were given a flyer containing a link to the study website. 112 flyers were distributed. Finally, individuals were thanked for their time and reminded of the website URL. The website contained the participant information sheet (Appendix I) which explained the study and its goals in simple language. It also contained contact links for the ethics committee and the researcher’s email address. Finally, at the end of the information sheet a link to the sign-up pre-study form was presented.

¹⁵ Participants were sampled using a Purposive Homogeneous Sampling methodology i.e. identifying participants that “share similar traits or specific characteristics” (Wu Suen, Huang and Lee, 2014, p. 3).

Minimum Requirements

A set of four minimum requirements were placed on participants during the signup process. Firstly, participants were required to be over 18 years of age to ensure safeguarding and ethics procedures were met. Secondly, participants were required to hold temporary or permanent UK residency. Given the current political issues brought about by the uncertainty of 'Brexit', and the status of data gathered in the UK and its potential transferability post-Brexit, the decision was made to exclude participants without a minimum temporary UK residence. Thirdly, participants required a UK mobile telephone number. This was primarily a cost-cutting measure to ensure that SMS messages were not sent internationally during the study and incurring high fees. UK residents without a mobile telephone number were not eligible. Finally, participants were required to supply an email address. This was to allow for possible contact pre, post and during the study should it become necessary. It was also the primary delivery mechanism for the incentivisation listening report.

Retention & Incentivisation of Participants

A notable feature of experience sampling studies is the lack of researcher-participant engagement. As a necessity of the design, researchers should not intervene in the lives of participants in order to maintain ecological validity (Hektner, Schmidt and Csikszentmihalyi, 2007) and authenticity of experience for the participants. However, whilst the strong ecological validity gained from ESM studies is a clear advantage in this instance, the lack of interaction with the researcher could leave participants feeling disconnected or disenfranchised in the study. This can result in poor retention rates for such studies. Furthermore, this study did not offer monetary remuneration for participation.

To overcome these issues, participants were incentivised with the offer of a 'personalised listening report'. The rationale was that highly engaged listeners may have an innate curiosity or interest in their own listening habits. The reports contained information concerning the individual participant's most commonly employed functions, comparisons to the most common functions across all participants in the study, basic demographic information for the cohort, and any particularly striking differences between their listening and the larger cohort.

5.3.4 Data Protection & Participant Interaction

Ethics approval from the University of York Arts and Humanities Ethics Committee was requested on 28/08/17. The approval process comprised of an application form, a statement of

informed consent for participants, the study information sheet, a copy of the flyer given to participants, examples of the Qualtrics forms participants would use, and the project's data management plan. This data management plan was followed throughout the study and no updates were required. The ethics committee were satisfied with the design and procedures put in place, and approval was granted on 1/09/17. These materials are included in Appendix G – Appendix M.

Participant Contact and Feedback

Participant contact was kept to a minimum after the initial approach. Participants were supplied with an email address from which they could contact the researcher directly if required.

Participants were requested to contact the researcher if they wished to leave the study.

Additional contact was required to send customised listening reports to participants who requested them after the analysis portion of the study. This was performed via email under with strict data management protocols.

As a result of the incentives offered to participants, it was necessary to link the anonymised participant data with their contact details to allow for customised listening reports to be sent. However, this presented an issue concerning data protection. The decision was made to create a “linking file” during the anonymisation process at the end of the study. The linking file would only contain three pieces of information: participant number (assigned during anonymisation), username (defined by participants during signup), and email address. The linking file was kept separate from all other data, and only exist in one off-site location (stored on an encrypted USB memory stick). Once customised listening reports were completed, they were sent to appropriate email addresses obtained by cross-referencing the participant number with the linking file. Sent emails were deleted from the email account and the linking file deleted.

Non-Completing Participants

Participants were under no obligation to participate in or complete the study. Importantly, a caveat concerning data was included in the datasheet and made plain to participants during signup: any non-sensitive data collected during the study could be retained by the researcher; sensitive data would be anonymised or deleted. The data of any participant would be retained by the researcher even if participants have left the study before it's completion. Participants could be removed at their own request or if they were removed from the study (owing to behaving in an inappropriate manner or not participating in the study would see participants

removed etc.). No participants requested to leave the study, but nine participants were removed for non-participation.

5.3.5 Data Collection

ESF Responses

The ESM study began on 09/10/17 and lasted the planned 7-days. Across the course of the study, 870 ESFs were submitted by participants. Of these ESFs 37 were incomplete and were removed from any analysis. Of those that remained, 573 pertained to listening episodes; 260 pertaining to non-listening episodes (see Figure 22). Compliance rates in response to the ESF requests (excluding removed participants) were 57.1%. Participants completed a mean of 12 ESFs ($M = 11.7$) excluding the final evaluation report, with an approximate 2/3 ratio of listening to non-listening ESFs (listening $M = 8.07$; non-listening $M = 3.66$). 21 ESF reports were not submitted in response to a specific ESF request and could not be apportioned to a particular request.

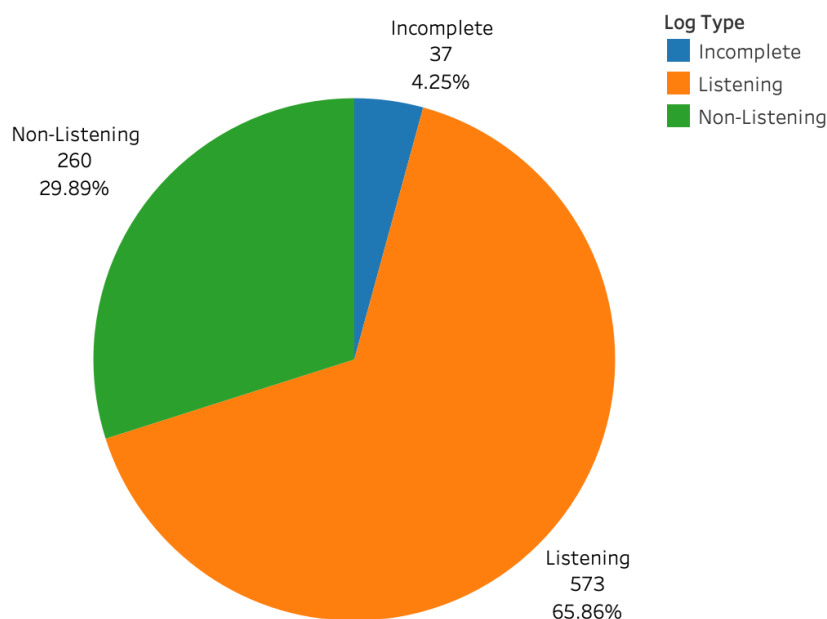


Figure 22 Frequency of ESF types

Participant Demographics

112 prospective participants were approached. 74 of these signed up to the initial study call. Three prospective participants were dismissed from the study as they did not meet the minimum requirements. A final group of 71 participants emerged. 71 participants began the study (34 females, 33 males, 4 non-disclosed or non-binary; aged 18-54, $M = 27.9$ years; $SD = 7.57$). 49 participants completed the final evaluation form, with 38 requesting the incentive

feedback report. Attrition rates for the study were relatively low (12.7%); nine participants were removed for non-participation. No participants requested to leave the study. The remaining 13 participants did not complete the evaluation form but were not removed from the study due to continued response to ESF requests. All complete ESFs have been included in the following analyses.

The pre-study cohort was approximately equal between female (34 participants) and male (33), with four more participants identifying as non-binary or declining to disclose. More participants in the younger age groups were female, with male participants more evenly distributed across the age brackets. A participant of unknown age also submitted logs, although they did not submit logs beyond the first day. Within post-study group non-completion rates for gender were similar between male and female (Male = 27.3%; Female = 23.5%), although non-binary and non-disclosed gender participants had a 50% non-completion rate. However, this group was distinctly smaller (4 participants) causing a larger effect from individual participant non-completion.

Post-study group non-completion rates for age were markedly different. The youngest age group showed the highest rate of non-completion (18-24 = 38.7%) and the second youngest showed the second highest rate of non-completion (25-34 = 23.1%). Interestingly, no identified age groups above this showed any non-completion. As such, it is possible to observe a trend towards older participants being more likely to complete the study.

5.4 Approaches to Data Analysis

Following the methodology employed in Study 1, the data was examined using thematic analysis. The data was explored for codes concerning the goals and functions, the activities occurring during music-facilitated goal attainment listening episodes, and the locations in which listening occurred. Further to this, the participants experiences of their listening goals and outcomes were explored from a qualitative perspective to identify further codes. Some aspects of the analysis, such as activity, location and function have established literature to draw upon, which allowed further discussion and exploration.

The following describes the various methodologies that were employed to analyse the large dataset obtained from the ESM study. It showcases the methods employed to construct a thematic analysis comparable to the previous bibliometric study using body inductive and

deductive coding, and various iterations of those processes. It also explains how the inductively coded data can be utilised in two different manners to construct both a taxonomy of function and a detailed qualitative review of each function in turn.

This data was used to generate three key analyses. Firstly, it was used to create a taxonomy of the functions of music observed in the ESM study, providing an overview of the experiences and perceptions of real-world listeners in a codified framework. Secondly, this taxonomic framework was explored through deep, descriptive analysis that examines the details of each function as it was experienced by participants in the study, providing a counterpart analysis to that already performed in the bibliometric study. Finally, the data was used to explore the role of activities and location within listening episodes, and link certain functions, activities and locations together to provide a possible investigatory methodology for further research into the role of context.

5.4.1 Thematic Analysis: Design and Procedure

The ESM study provides a wealth of data concerning how listeners view their own listening episodes. The study presents a significant quantity of qualitative data expressing how listeners believe they engage with music, why they elect to listen, how their listening relates to their current context, and how they perceive their current music-facilitated goal attainment listening. Further to this, nominal data also reveals where participants were during their listening episodes, the activities they were engaged in, the listening device they used, and most interestingly, categorical data as to what aspect(s) of the self they felt was being augmented or influenced by the listening episode.

Unlike the bibliometric study leading to the pseudo-consensus ATFF taxonomy performed in chapter 4, this sorting procedure only examines one dataset collected using a consistent methodology across all participants, and the data type analysed in here remains consistent between each report and participant i.e. primarily rich, qualitative descriptive data, and some additional nominal categorical data. As such, issues with cross-transferability of data types and findings are considerably minimised.

Coding the Data

The sorting and coding process will closely follow the bibliometric procedure established in chapter 4. The rationale behind this consistent methodology is three-fold. Firstly, the

methodology has already been established and was found to be successful on similar data in the previous analysis; it resulted in the successful construction of a pseudo-consensus from the bibliometric study. Secondly, it remains the most appropriate way to deal with this style of qualitative data, offering a “rigorous and high-quality” method of analysis for qualitative data sources (Clarke and Braun, 2017). Finally, repeating the same methodology has positive repercussions for the final stage of this research when both datasets will be directly compared and synthesised into one congruent taxonomy of function.

Example: Semantic Coding for Several Functions

The ESFs have been selected to include a range of text that were encountered gathered the study.

Field A - Describe Situational Goals	Field B - Music Selection Criteria	Field C - Explain Influence on Goals
Make room not so quiet. Help concentration	It makes me feel comfortable	Sometimes I concentrated to music too much
To help motivation	Keep me motivated whilst working out and keep my energy up	It kept pushing me whilst working out and stopped me giving up
Relaxation, distraction and concentration	EDM and k-pop for concentration. rock/metal for relaxation	EDM/k-pop fast beat and normally cheery melody gets the heart going and gets me motivated. The rock/metal is nostalgic.
Set a romantic mood	Both my partner and I like it a lot	The mood of the songs were consistent and well chosen
Company. Entertainment	I felt relaxed. and chatty	It provided background noise

Typically, Field A yielded significantly more results for semantic coding of function ‘Concentration’ was identified twice here. Instances of Company, Relaxation, Entertainment and Distraction were also identified.

Often, as is readily apparent from these few examples, many participants were highly aware of their situational goals and why they had elected to listen.

The bibliometric study established a deductive investigatory paradigm, allowing the data to ‘speak for itself’ rather than exploring the data for pre-established codes or categorisations of function. Codes, and therefore functions, will be developed from the ESM data contents rather than be led by the ATFF functions. It should be noted that the data will be treated as a discrete entity as much as possible, and as such should reduce possible experimenter bias to a minimum. Using an iterative coding approach will also reduce the opportunities for experimenter bias. The previous study also established a more flexible approach to data orientation, due to the broadly different styles of data that were dealt with during the study.

However, the overriding principle established a critical rather than experiential positioning regardless of data format, and such a critical position can be further reinforced given that the ESM data is fairly consistent in nature. Finally, the study (in alignment with this thesis more broadly) will maintain the critical realist epistemology explored in the previous study.

Example: Latent Coding for ‘Motivation’, ‘Relaxation’ and ‘Company’

The ESFs have been selected to include a range of text that were encountered gathered the study.

Field A - Describe Situational Goals	Field B - Music Selection Criteria	Field C - Explain Influence on Goals
Make room not so quiet. Help concentration	It makes me feel comfortable	Sometimes I concentrated to music too much
To help motivation	Keep me motivated whilst working out and keep my energy up	It kept pushing me whilst working out and stopped me giving up
Relaxation, distraction and concentration	EDM and k-pop for concentration. rock/metal for relaxation	EDM/k-pop fast beat and normally cheery melody gets the heart going and gets me motivated. The rock/metal is nostalgic.
Set a romantic mood	Both my partner and I like it a lot	The mood of the songs were consistent and well chosen
Company. Entertainment	I felt relaxed. and chatty	It provided background noise

In the second coding cycle, several further codings are demonstrated. Firstly, in Field B, the participant reinforces their use of music for relaxation and concentration, adding further weight to those items already coded in Field A. Furthermore, in the second ESF, latent examples of motivation can be found in Fields B and C that support the semantic coding performed in the previous vignette.

Most importantly, the third ESF also includes an example of a function in Field C that was not previously identified in the first semantic coding pass (motivation). This code exemplifies the degree to which latent coding can be a useful tool in identifying functions that even the participants may be less conscious of.

As such, the coding processes followed those established previously. Beginning with a semantic coding approach (again including synonyms and reversed antonyms) to firstly focus on the “explicit content of the data” (Braun and Clarke, no date), the coding was applied to each ESF in a randomised order. Within each ESF were three questions fields that presented data that may reveal functions occurred in each listening episodes. The three fields were searched for semantic fields that represent function. Typically, participants often included the full-infinitive form of a function i.e. ‘to relax’ or ‘to be relaxed’, providing clear and explicit content that could be coded accordingly.

Example: Identifying ‘Not Applicable’ and ‘Unknown’ Codings

The ESFs have been selected to include a range of text that were encountered gathered the study.

Field A – Describe Situational Goals	Field B – Music Selection Criteria	Field C – Explain Influence on Goals
Make room not so quiet. Help concentration	It makes me feel comfortable	Sometimes I concentrated to music too much
To help motivation	Keep me motivated whilst working out and keep my energy up	It kept pushing me whilst working out and stopped me giving up
Relaxation, distraction and concentration	EDM and k-pop for concentration. rock/metal for relaxation	EDM/k-pop fast beat and normally cheery melody gets the heart going and gets me motivated. The rock/metal is nostalgic.
Set a romantic mood	Both my partner and I like it a lot	The mood of the songs were consistent and well chosen
Company. Entertainment	I felt relaxed. and chatty	It provided background noise

In the next coding cycle, ‘Not Applicable’ data has been identified (shaded in dark grey). Whilst this data is certainly interesting and provides valuable insight into the nature of these listening episodes, it does not reveal function. As such it has been excluded from the analysis. Secondly, several items (“set a romantic mood”, “it makes me feel comfortable” and “the rock/metal is nostalgic”) has been identified as ‘Unknown’. Following the previous study methodology, these will be explored and latently coded once the remaining dataset has been coded.

However, as with the bibliometric data in study 1, the semantic coding processes did not reveal the full extent of the range of functions employed by participants. Rather, the three fields were then treated to several iterations of latent coding, cycling round as codes were developed that grouped several findings together into a coherent code or function. Within this iterative coding, it became clear that many participants did not use all fields to report their functions, but rather gave broader, more discursive descriptions of their listening and their impetus for listening. Indeed, this was anticipated within the initial study design, and these three question fields were specifically designed to engender a broad response in which functions may be found amid other descriptive data. These questions explored the participants current situational goals (Field A), their selection criteria for their listening (Field B), and the manner in which they felt the music influenced their situational goals (Field C). As such, this data is not ‘incorrect’ as in the previous study, but is not relevant has been coded as ‘not applicable’ and ignored in further coding iterations. The ‘unknown’ coding methodology from the previous study was also maintained here to allow for possible functions that were, as yet, not well defined or readily observable within the dataset.

Several iterations of coding were performed, parsing the data into the various coding groups (a normal function code, a ‘not applicable’ code for the data that was not relevant, and ‘unknown’ codings for the data that *might* represent functions). The ‘unknown’ codes were then sorted using semantic and latent methods, refining and identifying final data that may allow for a more complete picture.

Constructing a Qualitative Database

Whilst the taxonomy of functions present in the ESM data could now be extracted from the data using the codes and some simple frequencies, the data also allowed for a broader and more detailed analysis to occur. Whilst the initial focus here was to extract the data required for a possible taxonomic framework, the same coding data also provides a series of searchable markers or tags referring to each function. From this data, it is possible to identify each ESF that contains examples of any function identified in the taxonomy through basic search parameters. This data can then be used to perform a descriptive, granular, heavily qualitative exploration of the experience of participants when engaged in specific functional listening. These explorations and discussions provide comparable data to that presented in the ATFF functions discussion, presenting a listener-grounded view of the functional listening rather than an academic one.

Filtering & Naming Functions

The filtering that was performed in the bibliometric study was repeated in this sorting and coding process. Maintaining a universal definition is not only key to allowing strong cross-comparison to occur, but also resonates with one of the key issues underpinning this work. A more consistent methodological approach and universal definition might vastly reduce the need for such a study such as this to occur again in the future. Merriam’s founding definition was employed here again based on the same reasoning as discussed in the previous study concerning parity, consistency, and ensuring a valid analysis methodology.

However, it should be noted that while this analysis was ‘novel’ and occurred without direct reference to the prior bibliometric study, there is some similarity in the terms used to define codes. Given there are only a certain amount of functions, and only a certain amount of appropriate terms, where reasonable to do so code/function names have been duplicated.

Functions names such as ‘relaxation’ that were named such in the ATFF taxonomy are also used in this analysis were appropriate. This not only allows again for further compatibility in the final stages of this research (when comparisons are performed) but also typically represents the most frequent phrases and common language used by participants to describe their situational goals and functional listening.

Domain Sorting

In the prior bibliometric study, domains were informed by the nature of the function, and by the description of the function in deeper qualitative data. However, the ESM study offered the opportunity to allow listeners to define their own domain of action. As such, listeners were presented with a range of choices as to what aspect(s) of their self were augmented by the listening process. As such, we can determine the perceived domain-based effects of each listening episode based on data obtained directly from the participant. However, in listening episodes where more than one function is in operation simultaneously, it is not possible to discern which functions should be attributed to which domain of action. As such, we can view a general impression of the frequency of different domains but lack any further granularity on the part of domains within functions. The meta-domain will be maintained here, representing functions that transgress domain boundaries once again.

Context Coding

The ESM study gathered additional data that reveals the contextual features surrounding listening episodes; most notably the location and the activity during the listening episode. This information may provide a key insight into the role of context in listening episodes, and such data was theorised to be essential in the criticisms of previous research into the functions of music. By analysing relative frequencies of activities within locations and the functions that participants employ in those contexts, it may be possible to begin to frame the interaction between functions and context in a more meaningful manner. It may even be possible to offer some preliminary examples of statistically significant associations between functions and contexts.

Participants were asked to report their location and their activity in each ESF. This information was thematically coded. However, as this aspect of the coding methodology was novel and was not established. As such, here there was a valid argument for an alternative approach to coding than previously established (inductive semantic coding). Rather than attempting to generate

codes from a broad range of reports, it was possible to employ research that has already been established within this thesis. The categorisation performed earlier allowed direct access to a series of well-established categories (analogous to codes) for location and activity drawn from the strong previous research conducted into this area. These categories, derived from that previous research, allowed a shift in coding methodology. Although the epistemological grounding and the orientation to the data remains consistent with all previous coding processes, the investigatory paradigm could change from inductive to a deductive approach.

A deductive coding approach is driven “by existing concepts of ideas” (Braun and Clarke, no date). Using pre-defined categories for codes (such as those defined in chapter 2) the data can be readily apportioned to a specific code without the issues of interpretation and meanings that can arise, particular with latent inductive coding methodologies. As such, a deductive coding approach provides “a foundation for ‘seeing’ the data, for what ‘meanings’ are coded, and for how codes are clustered to develop themes” (Terry *et al.*, 2017, p. 10). Such coding allows for consistency with previous data and adds further support to the study outcomes and its ecological validity.

Example: Deductive Coding of Location

The ESFs have been selected to include a range of text that were encountered gathered the study.

Participant 1	Participant 2	Participant 3
In a van	Wedding party abroad	Er... the bathroom
Gym	At work	Train
Restaurant.	In the car travelling	Travelling
Bus	Travelling and gym	Car
Bed	Car	Home

The deductive coding readily matched all but one location to the established categories. Clearly transitory space (i.e. travelling) was most frequent in these examples, and the home environment was also strongly represented. The only location that was initially coded as ‘Unknown’ was the ‘Wedding party abroad’ which was after a final coding pass coded to ‘Other’

This same methodology was applied to the ‘activity’ field.

The ‘Unknown’ coding methodology used in the previous coding processes was maintained, with problematic or obscure activities and locations coded as such. These ‘Unknown’ items were then examined in more detail and coded to either one of the main categories, the ‘Other’ category if it was valid but not well encapsulated by any other code, or remained as ‘Unknown’.

5.4.2 Methodology

As with the previous bibliometric analysis, a series of procedures for sorting, coding and presenting the data gleaned from the ESM study have been defined. This analysis will study the 573 experience sampling logs that evidence listening. The logs present a broad range of listening experiences from different participants, and showcase the intricacies of both the mundane and the exceptional moments of listening that occur in many people's lives. The logs represent a (purposefully) amplified picture of the types of functions that might be employed by any listener at any juncture.

Firstly, the data was analysed using a series of strict methodological constraints supported by the extant research into the field and to illuminate the most expansive picture of listening in the ESM study. The procedure discussed above includes inductive (both semantic and latent) coding for the possible description of functions, and a deductive coding methodology for activity and location, grounded in previously explored research. The coding methodology is visualised in Figure 23.

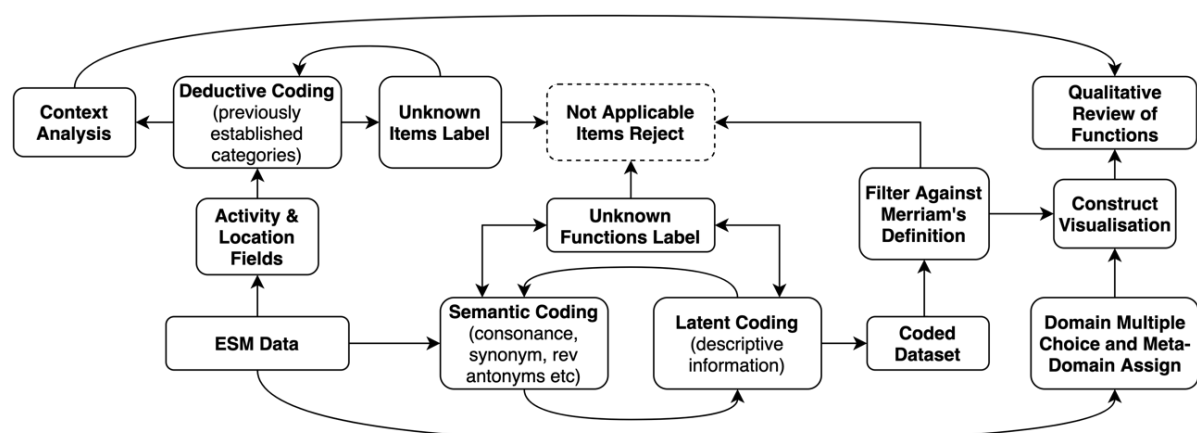


Figure 23 Thematic coding methodology for ESM data

The data that is coded in these processes can be used to perform multiple tasks. Firstly, the basic coding can provide a taxonomy of the functions of music identified in this ESM study as an isolated study. Secondly, the data can also be used to compared with that of the bibliometric study (questions about positivist interpretations of data notwithstanding) to create the most exhaustive taxonomy of function to date. Thirdly, this coded data also now provides the opportunity for deeper qualitative explorations of individual ESMs, providing a striking

counterpoint to the bibliometric study. This data allows for a more nuanced and listener-focused examination of function, giving a view of functional listening from ‘inside’ the experience rather than from the perspective of an external observer.

5.5 Findings

The ESM study collected a significant quantity of data, revealing much of the listening habits and experiences of participants. The resultant dataset presents us with over 66,000 individual datapoints, although many of these are not relevant for the questions explored in this thesis and will be used in future work. However, approximately 3,000 individual datapoints are directly relevant to the questions explored here. This data was coded manually in a randomised order, one ESF at a time. Some basic text field searching was used to identify location and activity types (based on deductive coding), but this was manually checked after the search and coding process was performed to ensure no reversed items or other confusion.

5.5.1 Listening Episode ESFs and Coding

The ESM study obtained 807 ESFs from participants. The inductive analysis performed on the data identified 1042 functional descriptors (coded items) from the 573 listening-coded ESFs. These 1042 goals were grouped and thematically coded. 46 initial codes were identified. This was later reduced to 44 with iterative semantic and latent coding cycles allowing for the removal of ‘Unknown’ coded items, and items labelled as ‘Not Applicable’ were removed from any further analysis. From this analysis 44 unique functions were identified in the data ($n = 44$), extracted from the rich qualitative data provided by participants.

These codes were then compartmentalised into broader themes representing domains. However, the ESF methodology was flawed in this respect, as it did not allow for differentiation across multiple domains and multiple functions when employed simultaneously. As such, the compartmentalisation into domain-based theme was based in part of the previous bibliometric analysis and on the qualitative reports of participants.

5.5.2 Domains

The ESFs offered each participant the possibility to state what aspect(s) of their experience and self were augmented or influenced by the act of listening. As querying the exact nature of domains with participants through non-specialist language proved difficult to accomplish, this field within the ESFs offered a methodology through which to obtain an insight into a concept

approximately comparable with domain. Unlike the previous bibliometric study, these frequencies do not represent the state of research, but rather the ecologically valid perception of listeners as to how they felt about their experiences.

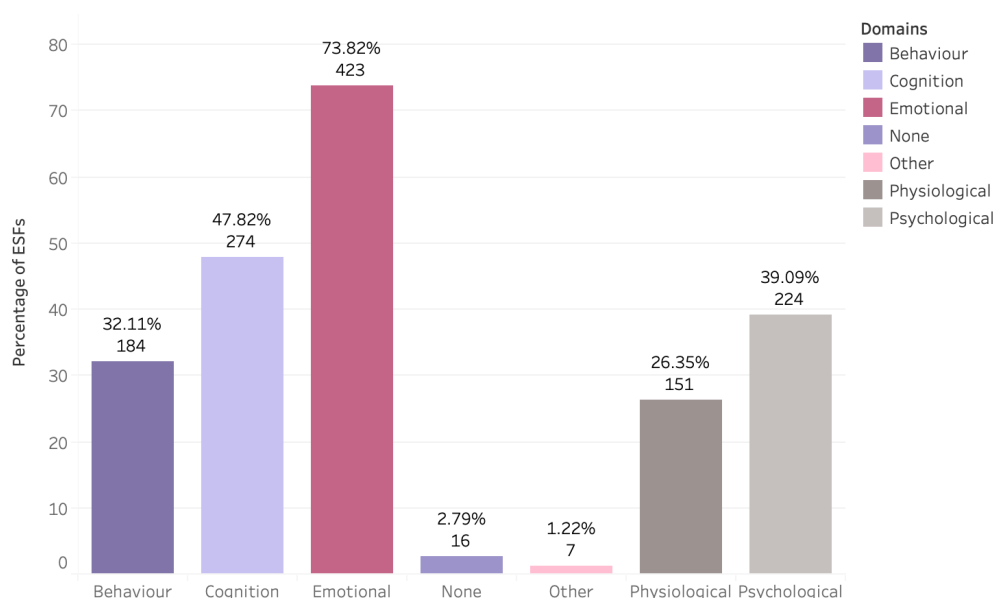


Figure 24 Frequency of 'aspects' reported in ESFs

In Figure 24 it is clear that the emotional domain presents the most common aspect of the self that was augmented by listening (involved in nearly three quarters of all listening experiences). Furthermore, cognitive and psychological aspects are also involved in a significant quantity of the listening episodes¹⁶. Only 7 listening episodes included an 'Other' aspect. The explanatory text field was under-used by participants here and does not offer any insight into the possible nature of this 'other' aspect. The same is true for the 16 references to the 'None' aspect with little explanatory information given by participants.

Due to limitations of language and non-specialist knowledge on the part of the participant, the options participants were presented with do not map directly onto those in the previously bibliometric study and do not include the social and identity domains (at least explicitly). The nature of the methodology and participants restricted these options. However, it is likely that parts of the behaviour domain maps well onto the previously established social domain. The

¹⁶ As a short clarification here, participants were informed that psychological referred to well-being and mental health, and cognition referred to attitudinal and thought processing abilities.

same may also be true for psychological and identity. However, further study would be required to reliably establish this.

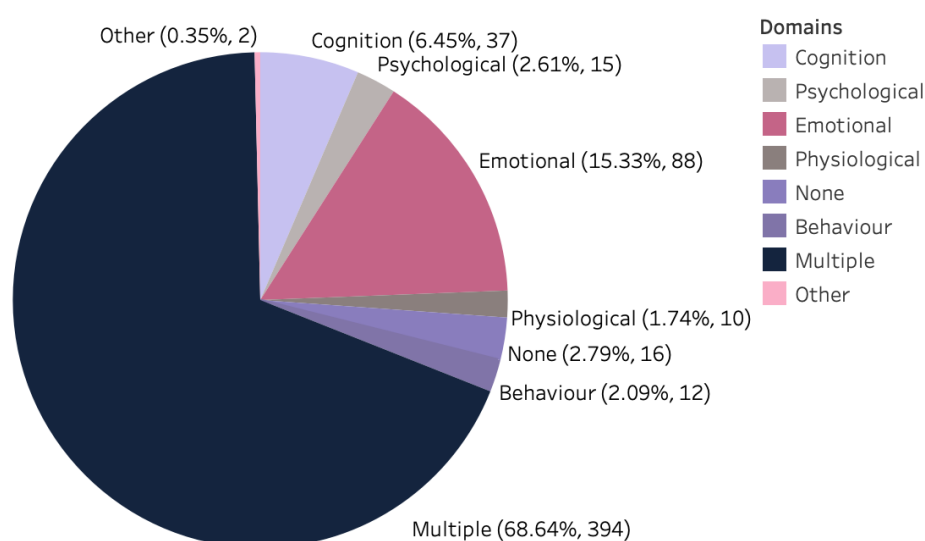


Figure 25 Frequency and relative percentage of ESFs by aspect

When viewing the data in more discrete units (Figure 25) we can observe that the majority (over two thirds) of episodes were perceived to act upon more than one aspect of the self simultaneously. Arguably this reinforces two key concepts that have been discussed several times in this research; listeners employing music for multiple purposes in a single episode, and goals may not be exclusive and can rather be layered and mingled into single episodes. However, even with such a large portion of the episodes impacting multiple different aspects of the self simultaneously, the exclusive episodes (i.e. those where only one aspect is impacted) maintain approximate ratios as the previous figure showed, with emotion accounting for the most instances, followed by cognitive and psychological aspects etc. Clearly, we can infer that emotion remains a very popular aspect of the self that can be access or augmented through listening.

5.5.3 Situational Features

Through the deductive analysis process, 13 individual activity types were coded. These were developed from the analysis of activity presented in chapter 2, and further augmented from the data presented in the ESFs. The most frequent activities were travel (180 ESFs) and working (115 ESFs). The least frequent activities were sleeping (three ESFs) and socialising (eight ESFs). An additional multiple activities category is also included in the analysis for those ESFs that

contained more than one concurrent activity, and an unknown category was added for those ESFs that could not be coded due to a lack of qualitative data from participants (Figure 26).

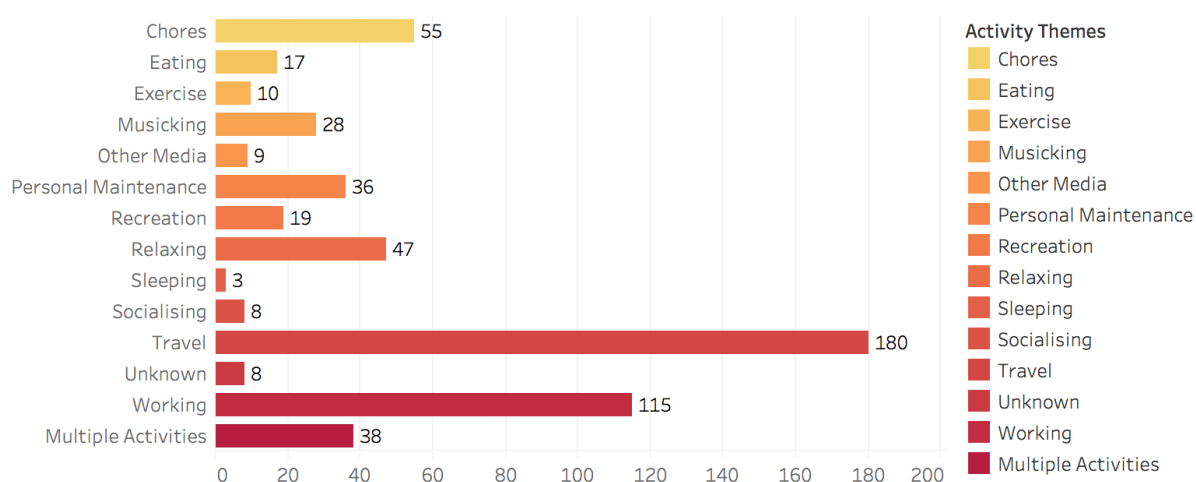


Figure 26 Frequency of activities in ESFs

Further to this, a similar deductive analysis was conducted to thematically code and compartmentalise the locations found within the study. These themes developed from the analysis of location presented in chapter 2 and were further augmented from the data presented in the ESFs. The most frequent locations were home (227 ESFs) and transitory space (181 ESFs), with work also occurring with a moderate frequency (79 ESFs). The least frequent locations were a natural environment and a friend's home (both three ESFs). An additional multiple locations category is also included in the analysis for those ESFs that contained more than one concurrent location. All ESFs were successfully coded and no unknown category was required in the analysis (Figure 27).

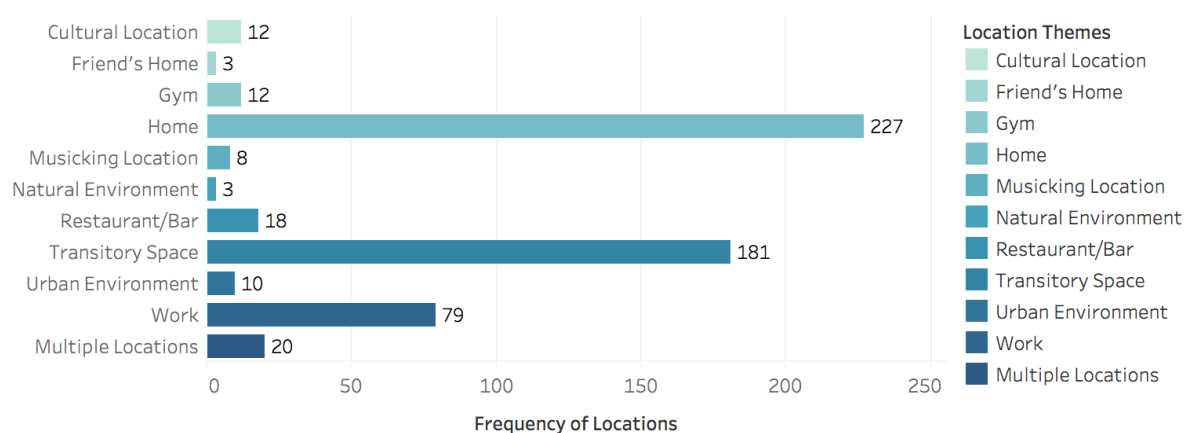


Figure 27 Frequency of locations in ESFs

As a consequence of the thematic coding, it is also possible to cross-reference the relative frequencies of activities occurring within the different location themes. A comparative cross-reference chart of activities and locations is provided in Appendix N and offers an insight into where specific activities occur, informing the situational aspects of the contextual triad somewhat. It is possible to observe both travel activities in transitory space locations and working activities in work locations as occurring particularly frequently together. Further to this, it is possible to see the home location theme as much more varied in terms of the activities occurring within the environment. The remainder of the locations show a generalised distribution across activities. The concurrent work and travel activities and associated locations are not surprising findings given the phenomena of prototypicality extant in the relationship between location and activity¹⁷. However, the relative distribution of other activities across the remaining locations is surprising and highlights the reflexivity of music-facilitated goal attainment listening to adapt to changes in the situational components of the contextual triad.

5.6 ESM Visualisation

In the sorted ESM study data, it was possible to identify 44 functions of music ($n = 44$) drawn from 573 ESMs (containing 1042 functions in total). Through the highly labour-intensive iterative analysis of the participant responses, it was possible to create a visual representation of the functions identified in the study that follows the same visualisation scheme as the bibliometric data and resulting ATFF. Although this visualisation is similar in design to the ATFF visualisation, the two should not be directly compared at this stage. Whereas the previous visualisation expressed the frequency with which different functions appeared within the available scholarly literature, the ESM functions visualisation expresses the frequency with which different functions were reported in a real-world study, and a taxonomy of the functions employed by real listeners.

¹⁷ In this sense we can consider prototypicality as an activity being heavily associated or representative of a location (and vice versa) resulting in a prototypical situation i.e. working at work or chores at home.

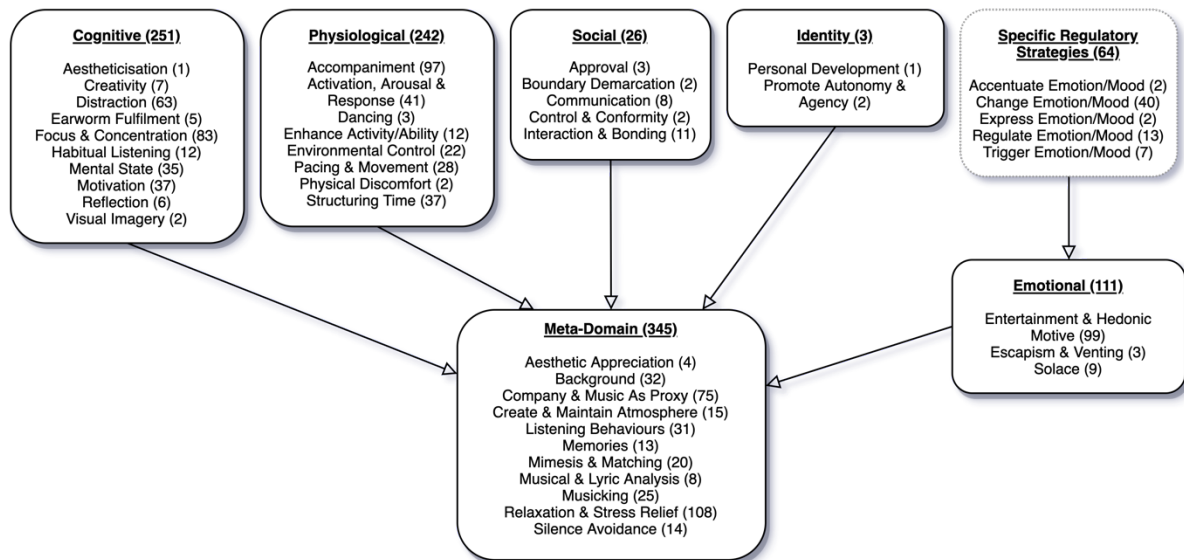


Figure 28 Visualisation of the ESM study functions data with frequency of functions

The visualisation content is significantly different to the ATFF, as the strength of the ESM visualisation (Figure 28) is that it reports the frequency of functions employed in real-world contexts. As such, it does offer a suggestion as to which functions may be generally more commonly employed, although to suggest these totals/frequencies should be applied outwards would be overly-positivist. This analysis is concerned with the specifics of functions of music as they present themselves in the ESM data.

It was possible to compartmentalise functions based on the coded qualitative descriptions and domains selected provided by participants. Unlike the data presented above (see 5.5.2 Domains), this data represents a reconfigured series of domains, consistent with the previous bibliometric study and based at least in part in functions theory (owing to the issues with the ESMs' ability to capture such granularity). The most function-rich domain within the coded data was the *Meta-Domain* with 11 distinct functions (and 345 references within the study data, Figure 29). Further to this, the most function-rich unique domain (as the *Meta-Domain* is arguably a conglomeration of all domains simultaneously) was the *Cognitive* domain with 10 distinct functions (and 251 references within the study data). The least rich unique area was that of *Identity* with only two functions (and only three references within the study data).

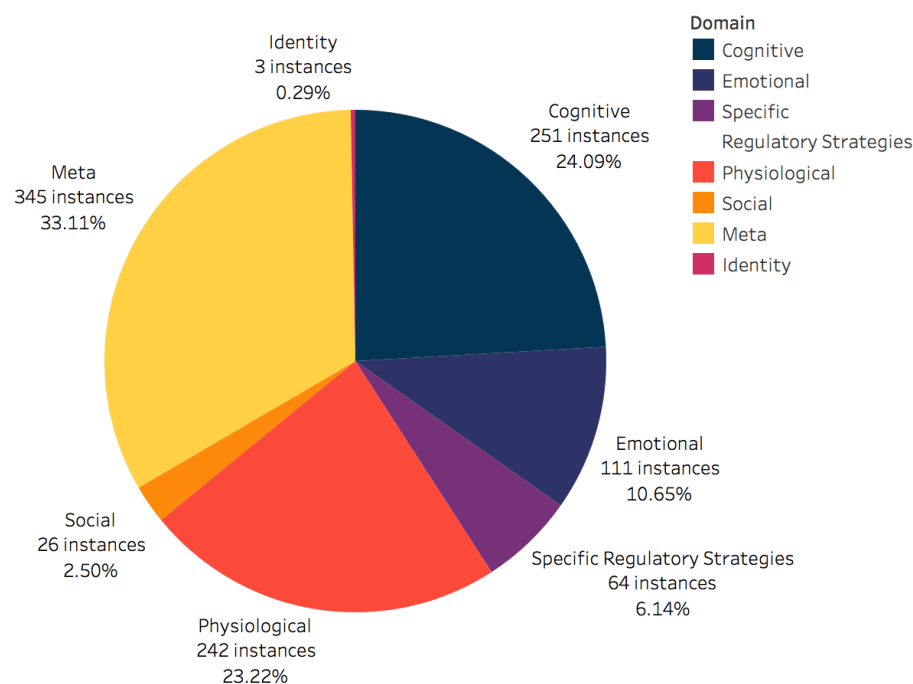


Figure 29 Total functions by domain

Appendix O¹⁸ shows the most frequently reported function was the *Relaxation & Stress Relief* function (108 instances in the study data), closely followed by *Entertainment & Hedonic Motive* (99 instances in the study data) and *Accompaniment* functions (97 instances in the study data). The five most frequent functions display a high level of variability in terms of their associated domain and goal-orientated listening. It appears many different goals are likely in action during these functional listening episodes. As such, we may infer that these functions are perhaps far more flexible and easily applicable than others, or that the goals to which they pertain are a regular occurrence in the lives of the participants. As this study was limited in scope, and utilised a purposive sample, direct positivist interpretations of the data should be avoided, although the data may provide some directions for further research. The findings are indicative rather than absolute in this case.

Conversely, very few instances of functions coded under the *Social* and *Identity* domains were reported throughout the study, and the breadth of those functions that were reported from these domains was severely limited. However, functions that have a low or very low frequency

¹⁸ Placed in appendices due to size.

of employment within the data may be more valuable as they may cast light on functions that represent something quite rare in functional listening and music-facilitated goal attainment listening.

5.7 ESM Functions Discussion

The following discussion explores each function identified within the ESM study sorted alphabetically. The functions are grouped into their domains and, where possible, presented in the same order as in the ATFF discussion. As domains have remained a consistent feature from the ATFF, there is no introductory discussion of domains. Each function is discussed in turn, and considers the various aspects of each function as they were found in the ESM data. Where data allows, the discussion details the frequency of the function occurring in the study, particularly activities and/or locations that were found to be significantly associated with the function (using contingency table analysis), and a description of pertinent descriptive aspects presented by participants. Such aspects have been expressed as themes or groups of direct quotations with interpretative descriptions added. This typically concerns a discussion of language and phraseology, and/or notable features described by participants in their ESFs. The names of functions have been italicised; concepts or processes that share the same name have not. Participants are referred to by participant number e.g. P052 or P001. The raw data from the ESM study and any frequencies and contingency table analyses are available by email request.

Finally, it should also be noted that whilst the previous ATFF discussion provided invaluable insight as to the academic view of functions, it does not represent a ‘boots-on-the-ground’ view of functional listening. Indeed, as discussed previously, the state of research is highly disparate, built from qualitative, quantitative or sometimes entirely theoretical work. Such research does not purport to speak for the listener in a normal listening episode. This review offers an insight into the perceptions, thoughts and opinions of highly engaged listeners during functional listening episodes. It is hoped that highly engaged listeners (as suggested by van Goethem) are more able to articulate their experiences in using descriptors and language more pertinent to the study of functional listening (although not frequency). This, when considered with the contextual information also provided, begins to add much needed detail, nuance and depth to the view of functional listening.

A Note About Contingency Table Analyses

Contingency table analyses are referred to in each function's discussion. This tool allows activities and/or locations that are significantly associated with the ESFs concerning a particular function to be identified. As such contingency table analyses are readily referenced in each function review and their significant associations are teased out. It was deemed unwieldy to examine contingency table analysis in further depth within each function or to weave the explanation and analysis of findings throughout the following review. As such, a later section fully explores the importance of contingency table analysis in understanding the contextual features of listening episodes and links the process directly to criticisms made in the literature review portion of this thesis.

At this juncture it is sufficient to state that, for this data, contingency table analysis reveals which locations and activities are significantly associated with certain functions, and this information informs the discussion of individual functions.

5.7.1 Meta-Domain Functions

i. Aesthetic Appreciation

Only 4 ESFs containing the *Musical Aesthetic Appreciation* function were identified over the course of the study. The limited number of ESFs makes interpretation of the material rather challenging. There are no identifiable themes of usage in the activities or locations in the contingency table analysis.

The scant descriptions provided by participants does offer some limited insight into the functional behaviour. Participants are particularly prone to highly aesthetic descriptions of the material. P038 was particularly eloquent describing both the “beauty” and “wonderfulness” of the musical materials. However, these adjectives do not necessarily connect to the emotional or experiential aspects of the listening episode but are rather concerned with the content of the musical stimulus.

Other descriptions are broader or less specific. P042 suggested their only driver for engagement was “general musical appreciation” with no real sense of an additional goal. The music was not specified as being novel, or for analytical purposes. The final participant was engaging with the music to provide an informed review of the material. The terminology used by this participant is notably detached from emotional considerations and focuses on appreciation from an aesthetic or critical perspective.

ii. *Background*

32 instances of *Background* functions were reported by 19 participants in the study. Instances typically occurred in the home and in transitory spaces, but were found to be significantly associated with the function in the contingency table analysis only in the homes of friends and family ($p < .001$). Instances occur distributed around most of the available activities, with a particularly frequent deployment during travel activities. In keeping with the significantly identified location (home of friends/family), socialising was the only activity found to be significant association in the contingency table analysis ($p < .001$). Given the nature of the significant locations and activities, an exploration of the social aspect of the function is prudent. No other activities or locations were identified as significant in the contingency table analysis.

It is likely that *Background* functions offer a sense of social easing. It is possible that *Background* functions are particularly useful in social situations as to ‘fill in’ silences between conversational bursts. *Background* functions appear to resonate strongly with the social constructs in the listening situation but with a more definable usage. Whereas ‘atmosphere’ is somewhat difficult to define beyond the notion of ‘mood’ or ‘feeling’, background music appears less important emotionally and physiologically, and is drawn into action to operate on the social elements of the listening situation by easing the interaction. It is even possible to conceptualise *Background* as similar to *Company* functions but with explicit social resonances, with the music becoming a third party within the social interaction that communicates in the spaces between conversation.

Concerning the qualitative descriptions provided by participants, the first key these was of the highly non-committal nature of *Background* function. Participants’ descriptions of the function are highly non-committal and almost incidental, compared to the positively valenced descriptions present in *Atmosphere* functions employments. P070 even referred to the material as “non-committal” in nature. Others refer to “light music”, “background music” and even often refer to the material as “noise” rather than music. Participants also frequently use the word “just” to diminish the importance or relevance of the engagement; P034 suggest the music “was just on”, P018 wanted music “just to have it on in the background”, and P038 referred to it as “just general background noise”.

iii. Company/Music as Proxy

Company functions were the 5th most frequent function in the study, being reported 75 times. The context in which the function was employed within the study is notable. Regarding the location in which engagements occurred, transitory space found to be the only significantly associated location identified in the contingency table analysis ($p < .001$). In keeping with this travelling was the only activity which was identified as significantly ($p < .001$). Many qualitative reports spoke about using the musical materials on public transport when surrounded by strangers. No other activities or locations were identified as significant in the contingency table analysis.

Participants appeared surprisingly aware and honest regarding their employment of functions. In numerous ESFs participants explicitly stated they employed music to “keep them company”. The music appears to provide a companion for the listener which listeners find comforting and is discussed in positively valenced terms; “good”, “happy”, and “cheerful”. Listeners did not reference the physical listening device as their companion. However, it is possible this was not a conscious consideration, or that the music was the more obvious expression of companionship than the physical device. P045 was particularly forthcoming in their description, stating the music made them “feel less lonely”. P045 was the only participant to explicitly state they employed the function to assuage or stave off loneliness.

The notion of assuaging loneliness contradicts with 13 of the ESFs reported in the study. These occurred in ostensibly social settings; some with friends, some with partners, and some with work colleagues. Some of these instances can be easily explained as a continuation of loneliness diminishment. P032 describes an instance of listening at work to specifically isolate themselves from their colleagues and interact with a companion they find more appealing (similar to *Boundary Demarcation* functions).

However, the difficult social dynamics of the workplace (sometimes working with those one dislikes) might not apply to friends and partners. In these instances, the participants feel the musical stimulus is an additional presence in the interaction. Unlike *Communication* and *Interaction* functions, *Company* functions add another individual or companion into the context that is readily interactive (or at least appears so). An example of this may be: music, in this function, becomes the third person in the car, responding at certain points of the

conversation or making the individuals feel at ease/comforted. Music is another presence in the situation.

iv. Create & Maintain Atmosphere

Atmosphere functions occurred 15 times in the study. The function occurred in a range of typically social environments (gym, home, restaurants and work environments), and the contingency table analysis reveals a significant association with restaurants environments ($p < .001$). Furthermore, the activity of socialising was also rated as significant in the contingency table analysis ($p < .001$). These findings offer a deeper understanding of the nature of *Atmosphere* functions as being associated with and employed at social junctures or events. The notion a 'restaurant ambience' may offer clues as to the ability of musical stimuli to facilitate social interaction by setting a mood or atmosphere within the environs. Although somewhat speculative, I would suggest this may allow some sense of anonymity or privacy in a public space through the masking qualities of music (an effect similar to that of *Environmental Control* and *Boundary Demarcation* functions). No other activities or locations were identified as significant in the contingency table analysis.

Participants frequently speak of "setting" or "creating" an atmosphere or ambience (there were no explicit mentions of "maintaining"). Typically, positively valenced words concerning the nature or tone of the atmosphere are expressed by participants, including "relaxed", "good", "nice", "ideal", "perfect", and, in one instance, "romantic". Participants seem readily capable of describing the type of ambience created, and reasonably connect it to context or situation. However, the nature of *what* an ambience consists of is notable by its absence in the ESFs. A small number of ESFs concerned a more nebulous conceptualisation of atmosphere or ambience. Two participants reported that music simply "adds atmosphere", without suggesting the atmosphere was valenced in any way. Without wishing to appear tautologous, it appears that, for some individuals, "atmospheric" is an atmosphere they desire to engage with.

Irrespective whether the specific tone of atmosphere is valenced or un-valenced, it seems that *Atmosphere* functions may be beneficial. In the interactive or communicative instances and the atmospheric un-valenced instances the function typically aids the individual in their situation. However, in some instances, particularly prevalent in unvalenced atmospherics, the function takes on an additional quality by heightening or adding an ineffable '*je ne sais quoi*' to the

context or activity. The exact nature of what this additive quality is or may be, must surely be entirely dependent on the context, the music, and the individual.

Participants reported that only 2 of the 15 instances of *Atmosphere* functions were when participants were alone, all other instances were with the presence of other people (typically partners, social groups, or work colleagues). The social nature of atmosphere creation is likely an essential part of functional employments for many participants. However, the two reported instances of *Atmosphere* functions employments whilst alone are also worthy of examination due to their relative infrequency in the study. Given the majority of ESFs occurred in highly social circumstances, it is likely that this function represents a tool to ease or facilitate social interaction between individuals or inter-personal/inter-group communication. However, there is also an interest argument suggesting that atmosphere creation is a form of social ordering. Other members of the group may obtain clues as to expected behaviour as a product of the musical stimuli. However, firstly, this is not mutually exclusive and social interaction may simply be one such mode of ordering; and secondly, it should be suggested that this does not occur in individual employments (non-social/alone).

As with other functions (such as *Mental State*) notions of “correctness” or “rightness” were very much present in the participant discourse. It appears that participants are very aware of what is appropriate for a specific context. P039’s description is particularly illuminating here; suggesting that for a particular listening episode the music was “well chosen” and was “consistent”. The idea of consistency is particularly interesting, as it may represent the first example from the data that shows an attempt to maintain atmosphere rather than only create. It also resonates strongly with the suggestion by P004 that appropriate atmosphere music should be “non-distracting”. Furthermore, P019 reported an instance where “the music created the right atmosphere, but was a bit too loud”. Although, atmosphere is certainly a flexible concept that can apply to many different, varying contexts, these three participants highlight the challenges associated with the “rightness” of the material. Music that is inconsistent, too distracting, or even at an incorrect volume can have an obvious impact on proceedings.

v. Listening Behaviours

The *Listening Behaviours* function provides further depth of understanding for listeners, but in a less formalised or academic manner than other functions such as *Aesthetic Appreciation*. 31 instances of the *Listening Behaviours* function were reported during the study. The function

occurred most frequency during travel (10 instances), working (6 instances) and was left relatively distributed amongst other activities with no occurrences during eating, exercise, other media, and sleeping. In keeping with these activities 13 instances were reported at home, 11 instances in transitory space, and 5 in workplace environments. No activities or locations were found to be significantly associated with the function in the contingency table analysis.

An importance facet of the descriptions proffered by participants concern novelty and newness. Many participants reported listening to satisfy their “curiosity” and engage in new listening experiences. Further reinforcing this is the concept of discovery, either explicitly or implied within the descriptions. P036 reported the desire to “rediscover a record” as part of their functional behaviour; inspired by hearing a song from their past which caused them to be “compelled to hear the rest of the album”. The novel quality of new music appears to be the key driver in this functional behaviour. Participants had a desire to discover and revel in new material, presumably with the aim of finding additional pieces of music they enjoy. It may be more appropriate to consider it ‘questing’ behaviour operating to prepare for future hedonically motivated situations.

Little information was provided as to the nature of the new music, suggesting that taste or similarity is not a necessity when exploring new musical materials. Participants appeared willing to experiment with new materials, even if they were beyond their established taste profiles. However, without follow up interviews or discussion this cannot be stated with any real certainty.

vi. Memories

Surprisingly, given the wealth of literature, research and public discussion on the ability of music to trigger autobiographical memories, the *Memories* function only occurred 13 times across the study. The ESFs were distributed over a wide range of activities and location, with no identifiable association or rationale underpinning the episodes. No activities or locations were found to significantly associated with the function in the contingency table analysis. The function occurred most frequently in the home environment (7 instances) perhaps suggesting privacy may be a component in the experience of the *Memories* functions.

When describing the function, participants spoke of three key aspects. Firstly, the element of reminiscence as integral to autobiographical memory. Further to this, many participants spoke

of reminiscences coupled with a sense of nostalgia. P054 stated that music brings back “happier times”. P004 spoke of the relationship with their partner and a shared sense of nostalgia: “[partner] was feeling nostalgic for a song as this was a soundtrack of uni days”. In this instance, not only is reminiscence and nostalgia the driver, but also the resultant memory trigger to a specific experience or set of experiences. Also, this stands as an example of a shared instance, something that is often rare beyond the social domain of functions.

The second key aspect of participant descriptions is that of a positively valenced memory. Several participants reported the positive nature of their memories. P002 reported that “great memories helped me smile and relax”. Others report their experiences using words such as “good”, “happy”, and “care free”. However, these memories often lack the nostalgic qualities, appearing to infer a desire or longing to return to specific moments. Participants are happy to be reminded and revel in happy memories, without the desire to “re-live”.

The final key aspect to participant descriptions are those of more negatively valenced *Memories* functions. Whilst often not expressly ‘sad’, many of the experiences could be considered bitter sweet or tinged with some degree of sadness/negative valence. Phrases such as P033’s “homesickness” typify the experience in these ESFs. One of the ESFs submitted by P004 sheds light on these instances most acutely. In this episode, the participant “wanted to lose myself in thoughts about my dad”. From further sections of the ESF it became apparent the participants father had recently died. In this instance, the participant employed their “dad’s favourite song” to reconnect and explore memories that were highly meaningful and emotive. It is possible that some sense of reconnection or catharsis is possible in these situations (although here the participant does not express such notions).

The function appears to aid access to memories or bring specific memories into improved focus for individuals. It is feasible the sonic instantiation of the music can act as a trigger, in the same way a souvenir or keepsake from a previous time or experience can also act as a trigger. The underlying rationales listeners have for engaging in the functional behaviour vary with both the valence of the prior experience, and the individual’s relationship to the prior experience. However, the resultant behaviours are the same; recall of the previous experience with music as the stimulus or aide memoire.

vii. Mimesis & Matching

The *Mimesis & Matching* function is one of the key novel findings of this research and sits within the meta-domain of functionality. The function itself is fascinating and has some, albeit limited, evidence in the existing literature. However, in this study 20 ESFs were reported by 10 participants. The majority of the ESFs were reported in transitory spaces when travelling. However, instances also occurred during relaxation, recreation and work-based activities and their associated locations. Transitory space was found to be significantly associated with this function in the contingency table analysis ($p = .001068$), mirroring the literature on *Aestheticisation* (likely a very closely connected function). No other activities or locations were identified as significant in the contingency table analysis.

Participants describe employing musical stimuli to “fit” their surroundings or environment. The phrase “to fit with” occurs frequently throughout descriptions of the instances. Indeed, P065 even went as far as to place the word ‘fit’ in inverted commas, hinting at the indefinable nature of the word. However, the specifics of what the musical materials *fit with* vary between two main themes: weather and location. Participants describe the aspects of weather influencing their functional employments, ranging from specifics of weather and temperature, P065 stated “matched the weather: heat and tension” and P036 referring to “a drizzle laden commute”, to specifics of seasonal variation “autumnal”, “summery”, “Indian summer”, and even time of day “night feeling in the air” across various participants. P009 stated their music “fitted the weather conditions”.

Beyond the weather, the situational or locational basis of the listening episode appears to have a bearing on the experience. Participants refer specifically to locations and events, such as P009 stating that “listening while the sun sets... felt apt”. P002 spoke about music fitting the “sea and surf”, and P001 explained the music “fit with the area I was walking through”. Others speak of specific geographical features such as waves, islands and hills in reference to their listening.

The exact nature of this function is, as yet, not fully mapped. No other studies of functions presented by other researchers include a comparable concept. Krause and North (2017a) have approached this area, demonstrating a general preference for certain musical qualities in certain seasons. However, no research currently exists as to the momentary influences weather or physical location may have on our listening materials or on our functional listening behaviours.

I would contend that, in this function, listeners are attempting to engage in a form of ‘auditory mimesis’; mirroring the primary or most obvious environmental factors within their internalised auditory landscape. P065’s “heat and tension” was married with dark, unsettling techno. P036’s “drizzle” somehow ‘matched’ the goth rock band Sisters of Mercy. P001’s “autumnal walk” was matched with gentle Parisian jazz. It would seem that aspects of the music somehow reflect the outer landscape or conditions. The specifics of this mimicking process (i.e. what aspects of the musical materials are similar to the environmental features) are likely highly subjective.

However, it is relatively easy to theorise that there are some sonic features that may readily map onto environmental features such as spacious, slow, highly reverberant music mimicking wide open spaces such as mountain ranges; ‘naturalistic’ acoustic instrumentation more readily matching natural environments such as the countryside; or electronic instrumentation matching with urban/technological environments. As such, it may be an attempt by listeners to bridge the gap between the internal and the external, reducing a perceived disconnect or inconsistency between the listener and their environment.

The *Mimesis & Matching* function presents a novel contribution to the field of the functions of music. However, without further study (likely within strict listening conditions) further description or analysis of the function is not possible or prudent. This function particularly is ripe for additional study and experimentation.

viii. Musical & Lyric Analysis

The *Musical Analysis* function occurred 8 times in the study, and specifies a particular approach to musicking. As a result, it represents a small fraction of the musicking behaviours one might engage with. No activities or locations were identified as significant in the contingency table analysis.

The word “analyse” was commonly invoked by participants when describing their functional behaviours. P033 expressed the importance of listening for analysis purposes to further understand and comprehend the melodic and harmonic intricacies of the piece. P053 also spoke of the necessity in listening to learn the details of a guitar melody. Throughout the discussions references to “understanding” and “focus” are also mentioned. P048 and P049 both discussed how the choice of material was defined by a “teacher” and a “lecturer” adding further weight to the above supposition regarding music education.

ix. Musicking

Musicking functions were reported 25 times across the study. Although a considerable number occurred in the home, it was not found to be a significantly associated location in the contingency table analysis; rather cultural locations ($p < .001$) and musicking locations ($p < .001$) were found to be significantly associated with the function. Also, given the coding for this study, most activities were categorised as “musicking”, which was the only significantly associated activity ($p < .001$). No other activities or locations were identified as significant in the contingency table analysis.

Although societally we often consider musical performance notable or somehow ‘special’, the descriptions provided by participants shed light on the mundane nature of many musicking episodes. Many participants spoke of listening to “learn” the material for performances, to working on technical aspects of musicking in a recording or sound engineering context. However, some participants spoke of more thrilling experiences with musicking. Indeed, the word “experience” was used by some participants with particular reference to live music; P010 spoke of “experiencing (a) band live”, and P067 related their “experience (of) amazing music live”. P010 went as far to suggest that “hearing the music was the main goal of my evening”, directly referencing the function that underpins their experience.

x. Relaxation & Stress Relief

Relaxation functions were the most frequently employed function (108 ESFs) in the study. 74 of the 108 instances reported occurred whilst participants are alone or in isolation (amongst strangers), and 34 instances occurring in the presence of known others. 60 instances occurred in home environments, with the remainder distributed among different locations. Further to this, activities were generally distributed with a larger frequency occurring during travel (24 instances) and 30 instances of relaxation as an activity, which was found to be a significantly associated activity with the function in the contingency table analysis ($p < .001$). However, this significance is highly redundant given the function primary goal is relaxation. No other activities or locations were identified as significant in the contingency table analysis.

Participants report employing *Relaxation* functions to “relax”, “chill”, “switch off”, and “calm down”. P006 reports employing *Relaxation* functions to be alone with their thoughts, giving them time and space to alter aspects of their mental, physical, or emotional arousal through musical stimuli. Others, such as P016, report employing musical stimuli to relax and not “think

of other things”. In both of these instances, relaxation and de-stressing is occurring through the use of musical stimuli. Although the methodologies differ somewhat, the aim and resulting effects are the same.

Frequently in the descriptions are references to “after”. Many participants reported employing musical stimuli for *Relaxation* functions after specific events. The events in question are often referred to in negative or stressful tones (physical work, mental work, stress), and *Relaxation* functions appear to provide participants with an aural antidote or some restorative capabilities. As with *Mental State* functions, *Relaxation* functions may offer a purging or clearing of previous levels of mental, cognitive or physiological arousal post-task. The function offers a way for listeners to “reset” their state to a more neutral or desired level. It also seems that music is an activity participants recognise specifically as a de-stressor or relaxation aid. However, participants were also equally specific concerning the musical materials themselves and what is appropriate or not appropriate as *Relaxation* function stimuli.

Participants report the music needs to be “nice”, have a “relaxed tempo”, be “chilled out”, and “simple”. Musical materials employed for this function needed to be, for the most part, unobtrusive for participants to effectively de-stress. P022 referred to the music requirements as “calm music, not jumpy or heavy music”. This appears to be consensus of the majority of participants. However, in a separate listening episode the same participant suggested that they require “rock/metal for relaxation”. Although this seems at odds with the generalised view of appropriate musical materials, it may suggest a different conceptualisation of *Relaxation*, one more connected to de-stressing or venting (see *Escapism & Venting* functions) than traditional views of relaxation. As suggested earlier, whilst the stimuli might differ, the personal goal and result is effectively indistinguishable.

xi. Silence Avoidance

14 instances of *Silence Avoidance* function were reported. Interestingly, the only location found to be significantly associated with the function in the contingency table analysis was urban environments ($p < .001$). This presents a surprising result as one would assume that silence is often difficult to obtain within heavily populated, industrial or commercial urban environments. Here, it may be prudent to not consider silence as an absence of noise, but rather an absence of desired or informative sound. It is possible individuals desire some form of ‘meaningful’

auditory stimulation thus silence avoidance tactics are employed. No other activities or locations were identified as significant in the contingency table analysis.

In essence, *Silence Avoidance* functions seek to minimise the risk of ‘realisation’ in the individual as to their potential aloneness (further to the previous discussion, it is certainly possible to be alone in urban environments). The function primarily appears to operate as a distraction from the current situation or to help the listener mask an aspect of their environment. Clearly, there are points of intersection between *Silence Avoidance* functions and other functions (such as *Distraction* or *Company*). Both are primarily employed whilst with others to augment aspects of the situation or behaviours, and both are reported with a surprising level of honesty and insight that appears to buck certain trends in the self-reporting study.

However, divergence occurs when examining the reports of participants. Participants are very aware of their reasoning underpinning this function as they speak explicitly of making their home “less silent”, wishing to “fill in the silence”, and “make the room not so quiet”. Participants reported in a frank manner that they do not like silence or find it unproductive to work in silence. Within the ESFs the sense of uneasiness that might occur whilst alone in a quiet place for some participants is alleviated through this function.

Interestingly, *Silence Avoidance* functions can be drawn into action in the presence of others. The instances of this function reported in the study that did not occur in isolation were with work colleagues (3 instances) and with partners (1 instance). Here, the exact nature of the music is not generally deemed as important, simply that it fills the perceived “gap” in conversation or allows conversational silences to be filled with something naturalistic and attention grabbing. P065 reported employing the function in conjunction with *Environmental Control* functions, simultaneously avoiding silence but also blocking the conversations of others.

5.7.2 The Cognitive Functions of Music

i. Aestheticisation & Filmic Listening

Only 1 instance of *Aestheticisation* was reported during the study. This occurred during travel (walking in this instance). Although the concurrent activity was rated as significantly associated

with the function within the contingency table analysis, the nature of the activity was coded as ‘unknown’. No further contextual information can be gleaned from the participant’s report. Whilst data is scarce concerning this instance, it is possible to infer some connections and resonances between the listening episode and the established theory of *Aestheticisation*.

The participant explicitly used the word “cinematic” in their descriptions with the goal “to make the walk feel cinematic”. The participant stated that they pictured themselves in a music video. It should be noted that this is distinct from *Visual Imagery* functions, as *Aestheticisation* tends to be discussed in terms of “feeling” rather than literal or imagined visual constructs; something heavily supported in the literature of Bull (2000) and Williams (2006). Filmic listening experiences appear to lack any imagined visual component, and instead transform the perception of the current environment through the addition of musical stimuli.

Further to the descriptions of the cinematic quality of the music and experience, the participant also discussed the rhythmic qualities of the music as intrinsically important to the experience. They reported that they were aware the beat would “get me” and “take control of me”. This connects strongly with the concurrent function reported in the listening episode: *Pacing and Movement*. The participant suggested that the combination of both beat and vocals gave them a “swagger” and resulted in a change in their walking pace. The participant reported walking in time with the music further adding to the filmic experience of the listening episode. In this instance it appears musical qualities or features are heavily influential in the functional interplay occurring in this listening episode.

ii. Creativity

The existence of a creative state, or the ability to engender such a mental state, is certainly open to debate from neuroscientists and psychologists. However, here we are concerned with the beliefs and phenomenological reports of participants/listeners. In the ESFs participants strongly express the opinion that music can assist creativity in certain ways, albeit rather rarefied with only 7 instances identified across the study. In the contingency table analysis only the working activity was identified as significantly associated with the function ($p < .001$), with 5 instances of the function occurring during work-based activities. No locations were identified as significant.

In their descriptive reports participants speak of openness, and music allowing access or entry to a creative state of mind. P019 summarised this suggesting that the music “supported me to

think daringly”. Other stated it increased the flow of thoughts or gave them an openness to new ideas. Furthermore, participants used the word “creative” or “creativity” readily in their ESMs. It would seem that those participants who employ this function are very aware of the possible implications it may have for performing creative work.

iii. Distraction

Distraction functions were the 6th most frequent function reported in the ESM study.

Distraction functions were consistently reported in home ($p = .001095$) and transitory spaces ($p = .00372$) and reported in conjunction with location-appropriate activities: chores ($p = .001622$) and travel ($p = .00126$). These were all identified as significantly associated with the function in the contingency table analysis. As such we can infer a significant association between

Distraction functions and travelling, and between *Distraction* functions and chores in the home.

The employment of *Distraction* in travel/transitory spaces was often discussed in consistent language in the data. Participants reported a desire to “distract from being stuck in traffic”, “stop the drive to work being boring” or needing “something to else to concentrate on when stuck in traffic”. During travel, the function is used to distract from an experience that listeners find boring, unengaging, or monotonous. Rather than using *Accompaniment* functions to accompany the journey, *Distraction* was used by participants to divert from the activity at hand, especially if the tasks could be considered physically and cognitively passive activities (as is likely the case in travelling and housework respectively). Furthermore, P044 reported both “distraction and to block out commuters”. In instances of travel such as this, *Distraction* was used in conjunction with *Environmental Control* functions, allowing individuals to both cognitively and auditorily block out others, and distract from the commuting experience.

Although not identified as significant in the contingency table analysis, 22.2% of the instances occurred in the workplace. The strongly cognitive nature of *Distraction* functions is perhaps best elucidated during work-place employments. Participants report wishing to “take their mind off work”, “distraction from repetitive tasks”, to simply “get through to the end of the work day”, and as capable of distracting from “monotonous work”; all phrases compatible with *Distraction* during travel. Regarding the use of *Distraction* functions at work, participants were particularly eloquent concerning their listening requirements or interaction with the listening material. When asked how their choices influenced their experience P008 stated “It’s an album that I don’t have to concentrate on and can drift in and out of at any point and still enjoy at

whatever point I start to pay attention again”. The ability to *tune in and out* of distraction materials appears to be key in the function’s successful employment. P070 perhaps most accurately and simply describes the nature of successful distraction materials as inherently “non-committal”. The music may simply occupy the listeners unused attention in such situations but said attention may be a flexible resource that can be refocused on work when required due to the music’s unobtrusive role.

However, there were reports of participants who’s selected listening materials proved too distracting to be assistive. P023 reported that “some distraction is unhelpful, such as talking on the radio”. There appears a delicate balance for listeners as to what can be considered a good or productive form of distraction that engages unused attention, and the danger of tipping across into detrimental distraction. One must question at this point whether such detrimental listening could even be considered functional?

iv. Earworm Fulfilment

Only five instances of the newly identified *Earworm Fulfilment* functions were identified in the study, and the function sits within the cognitive domain of functionality. Whilst activities were generally varied across the contingency table analysis, socialising was rated as significantly associated with the function ($p = .002808$) (likely owing to the relatively few incidents of socialising across the course of the study). No locations were rated as significant. The rarity of the function is of note. As the function is previously unidentified, there is little established information to draw on from the existing functions literature.

Earworm Fulfilment functionality, and earworms in general, have been the focus of recent study in music psychology. Williams (2015, p. 5) considers earworms as sitting within a wider conception of “involuntary musical imagery”, and defines the phenomenon as follows: “an earworm as a melody with or without words that imposes itself compulsively on the inner ear” (ibid.). Further to this, Hyman *et al.* (2015, p. 15) suggested that the experience is not always an unpleasant one, although an unfulfilled or “stuck” earworm can become an intrusive experience that listeners find unpleasant.

Several key points came from the qualitative descriptions supplied by participants. Firstly, is the notion that, for participants, the function only has one possible application. Unlike some functions that display a flexibility in application (i.e. *Relaxation & Stress Relief* or *Motivation*),

Earworm Fulfilment functions can only be used to deal explicitly with the phenomena of earworms. P037 reported “it was stuck in my head when I woke up” and that listening to said material can somehow clear or extricate the song from one’s mind.

In this function, the language used by participants to describe their experiences is less assistive in tone (help, keep, or maintain), and becomes far more imperative in tone. Participants speak of “needing” or “wanting” to listen to a piece of music or, in the case of P037, “I woke up singing it in my head so had to listen”. In *Earworm Fulfilment* employments, listeners appear to have much less control over the specifics of the function, and even less self-control concerning the employment the function. Participants clearly display a need to engage with the function to extricate the music lodged in their conscious brain. This may be a learned strategy of *Earworm Fulfilment* or may in fact be something at the very core of the nature of earworms. When questions about their reason for engaging with that music P004 stated “because it was an earworm”. The strategy is discussed in simplistic matter-of-fact language that appears to suggest that this behaviour is commonly accepted as a method of dislodging an earworm: is it simply what one does. P012 simply stated they wanted “to play the song in my head”.

Whilst the evidence for this function is limited (only five instances in the study), the lack of data may actually offer further insight. Within the qualitative descriptors, there is no weight given to the situation, location, activity or context in which the listening occurs with the exception that P037 woke up with the earworm already lodged (indeed, three of the five instances of *Earworm Fulfilment* happened in the morning). It is likely that earworms are not particularly connected to contextual features, thus the employment of *Earworm Fulfilment* functions could be seen as also entirely disconnected from contextual features.

It is reasonable to assume that *Earworm Fulfilment* functions sit apart from the wider body of functions as they are highly inflexible. Indeed, it could potentially simply be a coping strategy employed by highly engaged listeners to ameliorate an irritating quirk of human cognition.

v. Focus & Concentration

Focus functions were reported in 83 separate ESFs, making it the 4th most frequently occurring function. *Focus* functions were most frequently reported by participants during working in both home and workplace environments but were rated as significant in the contingency table analysis in work environments ($p < .001$) and in transitory spaces ($p < .001$). Consonant

activities of working ($p < .001$) and travel ($p < .001$) were rated as significantly associated with the function in the contingency table analysis. These results are unsurprising, given that *Focus* functions allow individuals to block out extraneous distractions and concentrate on a specific task, particularly mentally taxing tasks such as those encountered in the workplace. Interestingly, *Focus* functions appear to be employed in a similar manner as *Distraction* functions. However, this similarity is somewhat ameliorated when considering examples such as chores as distinct to working, with the latter requiring less cognitive focus.

Instances of *Focus* functions brought to the fore several common themes within the qualitative descriptions of employment. Firstly, the use of the word “help” is particularly notable. Participants refer to the notion that music can “help concentration”, “help focus”, “help slow down”, and “help get in the right mindset”. It would be appropriate to suggest that *Focus* functions are seen as beneficial, and listeners are generally au fait with such functions in everyday life.

Secondly, the nature of the musical stimuli employed in *Focus* functions appears to be of paramount importance, informing a great deal of the qualitative discussion of such employments in the study. Several participants highlight the need for focus music to be instrumental (without recognisable lyrics), as lyrics draw attention and distract from the task at hand. P007 states “there isn't a lot of singing, and if there is the voice is often very quiet and in the background a bit more than usually. This helps me so because I don't have to focus on the lyrics”. The requirement that *Focus* function music contain “no lyrics for me to get distracted by” (P001) is key for many listeners.

Furthermore, for many participants the nature of the music must present as “stable” and familiar. Participants discuss “stable pacing”, consistent rhythms, and the resultant “stability of focus” it provides, whereas others highlight the required familiarity that the music must have for them. P042 speaks that the music must be “familiar, also relative unobtrusive”. It is possible that the familiarity and stability of which participants speak concerns a required consistency or material, whereby no elements are particularly attention grabbing or unexpected. P019 discusses the music providing a “cushion” that did not distract awareness.

The third theme worthy of discussion is that of the adversarial interplay between *Focus* and *Distraction* functions. As with the notion of “helping” in *Focus*, *Distraction* can be seen as

assisting the allocation of unused attention or distracting from unpleasant situations (see *Distraction*). Some participants reported instances of Focus functions shifting from a focused state to a distracted one. P013 stated “it distracted me from doing my work rather than aiding me which was the intention” and P020 described a similar experience “it helped a little but I was too distracted by the music to really focus on the work I was doing”.

vi. Habitual Listening

12 instances of the newly identified *Habitual Listening* functions were reported during the study and sit within the cognitive domain of functionality. In the contextual analysis of the activities and locations surrounding the functions employment, only transitory space locations were found to be significantly associated with the function in the contingency table analysis (nine instances) ($p = .001079$). Listeners may simply habitually listen in transitory space as a consequence of previously conditioned or learned deployments. No other significant contextual features were identified.

Defining this function appears to be challenging for participants. *Habitual Listening* functions have little basis or evidence in the corpus of the established functions literature, and as such we are required to engage with the scant material provided by listeners and suggest a hypothetical description of the function due to its recondite nature. Based on relevant descriptions, most particularly Merriam’s original definition (Merriam, 1964), these functions certainly meet the criteria to be considered a function. Throughout the rather limited descriptions offered by participants employing *Habitual Listening* functions, the importance of the situational aspect of their engagement was paramount. Participants discuss times of day and activities, such as P018 use of their “normal radio station in the morning”, or P013’s “habit to have music playing whilst driving”. Indeed, many participants referred to their employment of music during their morning commute. For P018 the music had a particular role within their morning routine: “It wakes me up in the morning and sparks a conversation between me and my partner”.

However, the question remains as to what the deeper rationale or reason for the employment of such a function might be i.e. the very nature of the function. Merriam believed that for music to have function it must fulfil a purpose or *do something* for the listener in a context. Most *Habitual Listening* functions employments identified within the study had simultaneous functions in each listening episode. As such we can perceive many of these instances as *Habitual Listening* functions mixed with additional concurrent functions fulfilling specific goals.

The *Habitual Listening* function, when mixed with other functions in a single listening episode, might offer another greater depth of specificity concerning context for the listener. The addition of *Habitual Listening* functions may add a sense of fulfilment or achievement when engaging in listening.

Conversely, in two instances the function were reported as exclusive instances. This begs the question as to what the functions actually offer the listener. If we conceptualise listening as a habit or compulsion it is feasible to suggest that meeting the internal need within the individual to engage in listening may provide a sense of relief or fulfilment. The potential gratification gained from engagement during habitual episodes is greatly outweighed by the negative ramifications of non-engagement with the function. Rather than offering a particular effect, *Habitual Listening* functions may stave off negative effects. In this sense, we should unequivocally view habitual employments of music as utilitarian, and therefore, as a function. By way of evidence, we can point to P020 who discusses their desire to listen to music with no goal: “I was just listening to music... with no specific purpose in mind”. In *Habitual Listening* functions, simply listening *is* the goal, but may offer the listener a sense of relief or fulfilment when listening occurs.

vii. Mental State

Mental State functions could be considered one of the broadest and most variable functions within the entire functional gamut. In the 35 instances reported in the study, the breadth of description and application is the most striking characteristic of the function. The location in which *Mental State* functions are employed are striking for what is absent: most functional employments of *Mental State* functions occur within home or transitory space environments, with employments rarely occurring in other spaces. No activities or locations were found to be significant in the contingency table analysis.

When *Mental State* functions were drawn into action during the study, it was possible to identify three themes or concepts concerning their employment that emerged through an analysis of the descriptive features reported by participants. The first of these reoccurring themes is that of a “mindset”. Several participants discuss employing musical stimuli to either “put into” or “enter” a specific mindset. The specifics of what that frame of mind might entail are invariably broad, and shift between instances. P013 reported employing music to assist in achieving or “getting into the right mindset”. The notion of ‘rightness’ or appropriateness was

associated with the mindset theme often within several instances. The specifics of what makes a mindset ‘right’ is as yet unknown and is likely contextually dependent.

The second theme to emerge from participants’ ESFs is that of purging or expunging; music employed to specific remove or cleanse an aspect of one’s cognition. P021 reported that musical stimuli “cleared my mind after work”. In this sense, we can conceptualise this aspect of *Mental State* functions as performing a clearing or cleansing operation, allowing individuals to slough off previous mental states and shift to a different modality of cognition (likely in line with the ‘rightness’ discussed previously). Unlike other instances of this function, this aspect is discussed as occurring *after* an activity or event, allowing the individual to mentally conclude the event and prepare for their next state. This mental purging and shifting that is promoted in *Mental State* functions may be somewhat comparable *SRS Change* functions.

Thirdly, it is possible to observe a general sense that the perspectives, attitudes, mindsets etc. brought into action by this function are perceived as positively valenced or assistive. P035 reported the stimuli bringing about a “positive state of mind”. Although this might appear somewhat vague, others spoke to the musical materials providing “inspiration”, “confidence” or allowing them to feel more “hopeful”. Furthermore, participants spoke of music “building me up”, “powering up” or “psyching up” for the day ahead. Whilst the terminatory sense of the function (that of expunging or purging previous states) occurs post-activity, these descriptions appear as preparatory or concurrent listening episodes.

viii. Motivation

The *Motivation* function was reported 37 times across the study. In the contingency table analysis, the function was found to be significantly associated with exercise activities ($p < .001$), and in gym environments ($p < .001$). As such, it is possible to observe the function as having particular relevance for those engaging in physical exercise. There were no other significant findings in the contingency table analysis concerning activities or locations.

Instances of *Motivation* functions occur most commonly in the home environment (18 instances), but, interestingly, are distributed across a wide range of activities, occurring with relative frequency in conjunction with chores, exercise, personal maintenance, travel, and working. The distributed nature of activities where *Motivation* functions can be employed is worthy of note. *Motivation* functions appear to have flexibility, whereby they can be applied to

many different situations without particularly specificity of goal. It could be hypothesised that location or activity are inconsequential to the success of the functional employment, rather the individual's requirement to increase their motivation to achieve a specific goal or task within a location or activity is the key factor in determining the function's effects. In this case it appears this function does not motivate towards a specific task or location, but rather pushes an individual to engage in whatever task requires additional motivation (which is likely dependant on individual differences and perception/opinion of the specific task).

As with other functions (particularly *Focus* functions) participants discuss *Motivation* functions in assistive terms with the words “help” and “keep” particularly prevalent in the qualitative discourse. Participants reported that the music “helped me feel motivated”, “made me keep going”, or motivates to do something. The instances of *Motivation* functions can generally be seen as either: preparatory, allowing individuals to mentally motivate themselves in preparation for task; or, as consonant/concurrent with the task, allowing individuals to achieve a level of motivation that enables them to maintain their current output or “keep going”.

However, although it is possible to infer certain aspects of the function's role, the specifics of how or what the function assists within the participants is far less clear. Participants were not able to adequately explain how or why the musical stimuli had such an effect on them. In many instances an understanding of what music provided *Motivation* functions to them was even lacking. However, some participants were able to illuminate some of the possible connections between the musical materials and *Motivation* functions. P024 pointed to the “upbeat” nature of the music and its connection to the physical exercise they were performing. P002 echoed the sentiment stating that the music was “upbeat and up tempo and helped keep me going”. Others pointed to the importance of high volumes to inspire motivation. P018 reported “I pushed myself when the music was louder”. In this cohort there appears a tendency to use loud, energetic, fast tempo music to stimulate *Motivation* functions. This would support the research of Bishop, Karageorghis and Loizou (2007).

ix. Reflection

Only 6 instances of *Reflection* functions were reported in the study. Although the data is limited, the contextual analysis presented an interesting finding. Although the concurrent activities did not appear particularly diverse (working and travelling), they did highlight a rare instance of music being employed whilst engaging with other media (in this instance reading) as

significantly associated with the function in the contingency table analysis ($p = .002790$). No other activities or locations were identified as significant in the contingency table analysis.

Participants often discuss *Reflection* functions from two perspectives. Firstly, from a particularly intellectual or cognitive stance, participants discussed “reflection”, “thinking” and the ability of the music to make them “thoughtful”. These approaches are perhaps summarised as analytical in some way. The remainder of the descriptions concern more psychological phenomena with participants employing music to aid “mindfulness” and “centring”. These grounding terms offer a perspective on *Reflection* functions linked more with mental health concerns than the prior analytical approaches, such as problem solving or, as one participant suggested, “decision making” reinforce.

From the scant discourse, it would appear that participants can draw the function into action when needed or when an emotional or psychological distance is required from a stressor. The descriptions of the function explored in the ATFF analysis are consonant with the manner in which participants appear to employ and discuss the function. Vidyarthi et al’s description of the function as facilitating a re-analysis of the day’s events, and offering some perspective on incidents (see Vidyarthi *et al.* 2012) is reinforced by the study’s data. This level of introspection may have an emotional component as suggested by P051’s response that the music “made me feel connected to my past”, or P007’s report that the “lyrics make me reflect on everyday issues”. Whilst the musical stimuli may be considered somehow evocative, it appears there is a cognitive distance present in these engagements and the music is being expressly employed to provide perspective.

x. Visual Imagery

In the ESM study only 2 instances were reported of *Visual Imagery* functions. In both ESFs by P045, the activity and location are tied to travel. In both instances the participant is walking, and therefore in a transitory space. No activities or locations were found to be significantly associated with the function in the contingency table analysis.

Only one participant, P045 reported employing *Visual Imagery* functions. The two instances of *Visual Imagery* functions reported by the participant appear deliberate attempts to conjure visual images associated, at least in part, with the musical stimuli. They suggested they employed music “To help me daydream whilst I walk” and “To have some interesting

daydreams as I walk in the night because of the Friday night feeling in the air. The whole world feels different”. In these two ESFs it is possible to observe a seeking paradigm in action. The participant is aware that music can engender visual imagery and is expressly seeking such an experience.

However, in the second instance reported by P045 the nature of the transitory space does appear to be an important part of the functional employment. The inclusion of the time of day, a “Friday night feeling in the air”, and their experience of the world feeling somehow “different” must, in some way, impact upon the experience. The participant also discusses the notion that they can “immerse” themselves in the daydreaming experience. Here there may be some resonance with the ideas presented in the *Matching & Mimesis* function, but the lack of extensive evidence makes any such claim little more than conjecture.

The participant also reported very specific imagery emerging from the employment of the function. In one instance where the listening material was ZAYN’s *Dusk ‘til Dawn*, the participant stated, “It made me feel certain of myself, and also let me daydream about being some kind of agent in a dangerous situation, as Zayn is in the video”. Here the participant is using specific musical stimuli to trigger specific visual imagery. In the other instance the same participant had no such visual specificity, although certainly it did contain a significant emotional resonance: “It made me feel like I could further connect to a character in the book I finished, because it’s sad and has the feeling of martyrdom”. Whether these expressions are typical of *Visual Imagery* functions is not known. However, from this we can infer the considerable rarity of this function.

5.7.3 The Emotional Functions of Music

i. Entertainment & Hedonic Motive

The *Entertainment & Hedonic Motive* function was one of the most frequently reported functions in the study. 99 instances were reported, placing the function as the 2nd most employed function in the study. The majority of ESFs occurred within the home environment (42 instances) with transitory space accounting for 34 ESFs. However, the work environment was found to be the only significant location associated with the function in the contingency table analysis ($p < .001$). Furthermore, activities were generally distributed across several categories, with travel accounting for over a third of all instances (35 instances).

Whilst entertainment is clearly one of the most common and easily identified functions of music, the manner in which participants reported their enjoyment of the music and functional behaviour was somewhat unexpected. The function often appears couched in terms that are non-committal or possibly even ‘blasé’. Very few examples from the study could be considered enthusiastic or exuberant. P036 stated “it kept me entertained for a while and allowed me to enjoy the passing scenery” and P029 stated “it just filled the time, light entertainment”. This neutral language is typical of the function’s ESFs. However, this language may offer an important insight as to the function in broad terms. Although we often think of entertainment and hedonically motivated activities as things that bring pleasure, such enjoyment does not necessarily have to be of significance to the listener.

The words “entertainment”, “enjoyment”, “pleasure, and “fun” are used interchangeably in participants’ ESFs. However, often the content of the musical engagement was highlighted as non-essential to the experience. P010 stated that they “imagine that a lot of other music would’ve had the same effect”. In an additional ESF, P010 also stated the music “was readily available so I didn’t have to decide anything myself”. This reinforces the non-committal nature of many of these experiences.

ii. Escapism & Venting

Only 3 instances of the *Escapism & Venting* function were reported. The episodes are dispersed equally amongst cultural locations, home and workplace environments (and the associated activities of recreation, chores and work). The occurrence in a cultural location took place in an amusement park (P009) and was found to be significantly associated with the function in the contingency table analysis ($p < .001$). The music in question was, according to the participant, “piped music at the venue” and out of their control. No activities and other locations were found to be significant in the contingency table analysis.

Although the incidence of ESFs is very low, there is notable data contained within the descriptions of participants. P020 and P024 both expressly used the word “escapism” in their descriptions. Beyond this, participants appear to employ the function specifically for emotional purposes. P024 suggested the music was “something you can sing along and escape to”. P020 employed the music to fulfil their desire “to be taken involved in a calm space for a moment”. In both of these instances, participants appear to use music in a manner similar to *Distraction*, but a more overt or emotionally meaning version thereof. They employ the function as a

means to extract themselves from the current situation or ground themselves within a situation. The music provides an auditory recontextualisation of their current situation.

In the amusement park report from P009 the same methodology appears to be occurring, but with drastically different results. The participants focused on the music as a means of escapism while waiting to experience a theme park ride. They stated their current goal was “not to lose my shit when I got frightened on the scary rides”. However, the musical materials selected by the amusement park appear to have been chosen to inspire fear or trepidation in the customers. The participant reported the negative impact of attempting to use the music for escapism: “made me more nervous. not a calming influence at all”. In this sense we can consider ‘escapism’ to mean ‘fantasy’.

iii. Solace

Across the course of the study 9 instances of the *Solace* function were identified. ESFs were most frequently reported whilst traveling (6 instances), with additional ESFs occurring within the workplace (3 instances) and at home (2 instances). No activities or locations were found to be significantly associated with the function in the contingency table analysis.

Unlike some functions examined in this research, the descriptions provided by participants of this function are, although limited in number, highly edifying. The language used by participants resonates with the emotional character of the function. In one of the more extreme examples, P037 suggested the main use of the music was to allow them “to wallow and cry” as they “relate to a couple of songs pretty intensely”. Here we can observe the indulgent aspects of the musical engagement, whereby the music is used expressly as a sanctioning device allowing the individual to engage with negative emotions to achieve a sense of solace; ‘catharsis’ may be the most appropriate phrase to summarise participants’ experiences of this function.

Other ESFs refer to the comforting aspects of the musical experience. P027 referred to the listening experience as “comforting” that allowed them to “centre” themselves. P036 rather poetically referred to the musical material as an “audio pillow” which allowed comfort from the stresses of an early morning commute. Similarly, P008 suggested the music was “just like a warm blanket to wrap myself in”. Further to this, P003 expressed the same notions in less elegiac language, stating simply “it helps me to feel better” and allowed them to “forget more about pain and feeling down”.

The most fascinating response was reported by P009 who replied the aim of the music was to “return balance”. This was also accompanied by a maximum rating in both awareness and effectiveness for the instance. This is likely another example of the sanctioning experience strongly tied to the *Solace* function. The depth of feeling and emotional importance of both the contexts and the effects of the functions may account for such highly rated mean awareness and effectiveness in this function.

5.7.4 Specific Regulatory Strategies

i. Accentuate

Only one participant within the cohort reported *Accentuate* functions, with 2 instances reported. The first instance occurred at home during personal maintenance activities, the second occurred while travelling. No activities or locations were found to be significantly associated with the function in the contingency table analysis.

Further to this, the descriptive aspects of the ESFs also lack detail. P002 simply reports that the music was a “mood booster” in one listening episode, and in the other that the music “enhanced my mood”. The participant’s descriptions were mainly concerned with the musical features of the material; both instances were energetic and upbeat. It would appear for this participant, music that is positively valenced with high tempos is effective for accentuating positively valenced moods.

ii. Change/Shift

The *Change Emotion* function was the most commonly employed function within the Specific Regulatory Strategies subdomain. The function was identified in 40 ESFs. The function was most commonly reported during travel (18 instances), but also in the workplace environment (9 instances). There were 13 instances of the function employed in the home. The activities associated with the function is more distributed, but the majority are attributed to travel (19 instances) and work (9 instances). No activities or locations were found to be significantly associated with the function in the contingency table analysis.

The descriptive reports submitted by the participants have one key theme that is repeated throughout the majority of the entries. Participants appear very aware of the directionality of

their regulatory strategy. An upwards trajectory in terms of mood and arousal is referred to in many ESFs. P004 speaks of “cheering up”, P002 states the music was used to “pump up my mood”, P019 referred to the music as “uplifting my mood”, P042 spoke of “lifting my spirits”, and P071 suggested the music can “raise spirits”. This continual directional approach to arousal or valence or mood (albeit couched in colloquialisms) is a key finding for this function. Participants appear keenly aware of their emotional trajectories.

In addition to this, there were no examples of participants actively ‘lowering’ their mood states into negatively valenced states or even shift their valence to a neutral level. However, small number of participants did report using music to reduce arousal levels whilst still maintaining a positive valence. P018 reported employing music to allow them to “feel chilled after work”, and P071 recorded an episode where the music “allowed me to space out” before work.

Furthermore, concerning participant descriptions, several participants referred to the function in relation to another task. Some instances show participants employing music post-task; in the experience of P015, “relax/cheer up after a large delivery of kitchen items”. Here we can observe instances of post-task music that may operate to re-orientate or rebalance an individual’s emotions or mood from the rigours of the task and the impact said task may have had on their arousal and valence states. Others used the function in a pre-task context, shifting their emotions or mood toward a required level to perform the task more successfully. P071 suggested music “raised my enthusiasm before work”. This may represent one of the most simple and significant examples of music employed for utilitarian functions.

iii. Express/Convey

2 instances of the *Express/Convey* function were identified in the study, from 2 participants within the cohort. However, the lack of comparative participants and low incidence of ESFs confounds attempts at analysis. The two ESFs occurred in work environments and transitory space, with the consonant activities of working and travelling reported. No locations or activities were found to be significantly associated with the function in the contingency table analysis.

The participant descriptions, although scarce, do offer an insight into the possible nature of the functional employments. P039 expressed their need for ‘catharsis’ within their ESFs. They suggest that employing music allowed them to express their feeling through musical stimuli. The participant believed the expression was effective due to the nature of the musical materials

chosen to enable expression. They suggested they relate to the material well, perhaps providing some form of connection or conduit through the materials. P037 also noted their relation to the piece of music as an important factor in enabling them to convey or express their internal emotional states.

iv. Regulate/Maintain

In the study 13 instances of the *Regulate/Maintain* function were identified. The function was most frequently employed in the home (5 instances) and while travelling (6 instances), with commensurate activities with said locations. No activities or locations were found to be significantly associated with the function in the contingency table analysis.

The descriptive features referenced by participants relate strongly to concepts of maintaining a consistent, positively valenced mood state. 8 of the ESFs include the word “keep”; P001 stated it “kept me in a positive mood”, P002 stated it “keeps my mood good”, P017 stated it was “to help keep me happy since leaving the gym”, and P071 stated it helped “keep mood up”. This is often interchangeable with “maintain”, with ESFs offering phrases such as; P065’s statement that the music allowed them to “maintain a good mood”, a phrase echoed verbatim by P028. P036 stated the music was used to “steady my mood”¹⁹.

The second aspect of the descriptive reports is that of the positively valenced mood. There are no examples within the ESFs that suggest any negatively valenced mood states in operation, with participants preferring “positive”, “good”, “happy” or “positive attitudes” throughout the course of the study.

v. Trigger/Elicit

Only 7 instances of the *Trigger/Elicit* function were reported in the study. The function was most commonly reported in the home environment (4 instances), with additional employments occurring while traveling (2 instances) and in the workplace (1 instance). The ESFs occurred during personal maintenance (2 instances), relaxing (3 instances), and traveling (2 instances) activities. Relaxation activities were found to be significantly associated with the function in the

¹⁹ P036Log11 is an unfinished ESF report and is not included within the quantitative analysis, however, it does provide insight into the function’s operation.

contingency table analysis ($p < .001$). No other activities or locations were identified as significant in the contingency table analysis.

Although data is limited concerning this function, there are two key points within the descriptions offered by participants. Firstly, many participants suggest that they employ the function to “put me into a good mood”, or as stated by P040, it can “promote a good mood”. As with many other Specific Regulatory Strategies instances within the study, there are no examples of negative mood regulation in operation. All participants are triggering or eliciting positively valenced mood states or emotions.

Secondly, P065 described the *Triggering* function as “musically splashing cold water on my face”. Further to this, P004 explained their desire for “something evocative”. Here we see not only considerations of emotional states, but the dynamic shifts the *Triggering* function can engender. P065’s water example is particularly insightful, inferring the idea of a shocking change in the emotional state of the individual.

5.7.5 The Physiological Functions of Music

i. Accompaniment

The *Accompaniment* function was the most widely employed function across the cohort with 65.28% (47) participants employing the function at least once during the study. The function was the 3rd most frequent function (97 ESFs reported). The function was most frequently reported during travel (47 instances) and was found to be significantly associated with the activity in the contingency table analysis ($p < .001$). Chores (14 instances) and work activities (12 instances) were also found occur frequently in the ESFs. The locations where the function was most commonly employed at the corresponding locations (transitory space, home, work), with transitory space also found to be significant in the contingency table analysis (echoing the previous finding from activities) ($p < .001$). No other activities or locations were identified as significant in the contingency table analysis.

The function is delineated clearly within the participants’ descriptive reports. Many participants expressly use the phrase “to accompany”. P009 stated the music was “to accompany the journey”, P029 reported a similar experience: “to accompany my car journey”. Several participants couched the function in specific terms surrounding an action or activity using structures such as i.e. ‘to do *something* to’. P006 reported using the music “to help me sleep”,

in one of the 3 instances in the study where sleeping was the primary activity. P043 suggested the music was “good music to cook to”. In these instances, music is employed not as a soundtrack or proxy for human contact, but merely as an accompanying stimulus to another task. Interestingly, several ESFs speak of how music ‘allows’ certain behaviours. P005 suggested that music “would allow me to read”. In this sense, the participants are not speaking about the music sanctioning behaviours (as might be the case in social domain functions), but rather as a facilitator, enabling the individual to engage more with the task at hand.

ii. Activation, Arousal & Response

The *Arousal* function was identified in the study ESFs in 41 instances. The function was most frequently reported during travel (17 instances) and in the home environment (17 instances). Gym-based locations were found to be significantly associated with the function in the contingency table analysis ($p < .001$). The most common activities reported were traveling (17 instances aligned with the transitory space location classification), and personal maintenance (7 instances), which was found to be significant in the contingency table analysis ($p = .003127$). No other activities or locations were identified as significant in the contingency table analysis.

The descriptive aspects of participant reports echo the findings reported in the *SRS Change* function analysis. Typically, participants invoke an upward trajectory, but in this function, the directionality concerns perceived ‘energy’ levels, rather than positively-valenced moods or emotional arousal changes. In their descriptive qualities, the two functions appear rather similar, with *SRS Change* dealing with emotional concerns, and the *Arousal* function operating on physiological considerations.

P001 explained the music “helped me feel pumped”; and P002 suggested the music allowed them to “get pumped up for the day”. Although this language is typical of exercise-related conversation, only 3 instances of *Arousal* were identified as occurring in exercise related activities. With respect to exercise, P002 did explain that “we were lifting heavy, kept me grinding it out”. It appears that in these exertive situations, and in other less physically demanding contexts, music can have an “energising” function for listeners. Several participants even used the word in their descriptions; P042 stated to “feel energised for the day ahead”, P064 related that “it has a kick to it which helps me feel energised”, and P002 stated the music’s “fast tempo kept me energised”.

Furthermore, with regards to the descriptions, several participants explained the music was a useful component in allowing them to wake up in the morning or helped them feel more awake or alert. In all of the ESFs discussed here, the function plays a highly assistive role in the everyday activities of these individuals. Music enables them to draw on energy reserves or can increase their perceived exhaustion limit (Elliott, Carr and Orme, 2005; Karageorghis and Terry, 2009). In these descriptive reports, music appears to allow or sanction listeners to access additional energy, or even that their perceived increased energy levels emerge ex nihilo.

iii. Dancing

Only 3 instances of the *Dancing* function were reported. The episodes are dispersed equally amongst musicking, personal maintenance, and recreation activities, and the associated locations. Interestingly, owing to the relatively low incidence of cultural locations reported in the study, the function is also significantly associated with these locations in the contingency table analysis ($p < .001$). No other activities or locations were identified as significant in the contingency table analysis.

The descriptive reports submitted by participants offer very little insight. Participants appeared to have the goal “to dance” and therefore were relatively easily able to do so by employing music. Unlike many other functions, *Dancing* appears to sit in an uneasy position somewhere between activity, goal, function and use. As with *Earworm Fulfilment* functions, *Dancing* functions appear to display a limited flexibility, with only one possible goal associated with them.

iv. Enhance Activity or Ability

The *Enhance Activity* function was identified in 12 ESFs. The listening episodes occurred most frequently during exercise activities (4 instances), but also occurred during travel (3 instances), and musicking (2 instances). 3 instances were also reported during sleeping activities. The function occurred most frequently in gym environments (7 instances) and in the home (4 instances). The contingency table analyses of the function found two significant associations with the function. Firstly, both exercise activities ($p < .001$) and gym locations ($p < .001$) were found to be significant, clearly relating to one another. Secondly, socialising ($p < .001$) was also identified as a significant activity with 3 instances aiding socialising. No other activities or locations were identified as significant in the contingency table analysis.

In the ESFs concerning physically challenging activity, particularly exercise, participants refer to the music enabling them to more effectively engage with the tasks. P036 draws attention to music in aiding in “repetitious tasks” at the gym. Further to this, participants report the music raising their stamina or perceived time to exhaustion. P002 stated the music helped to “keep going with a long workout”. There are clearly resonances with the *Motivation* and *Arousal* functions here.

However, the 3 instances concerning sleep are also of note. Participants cite the music as aiding in sleep or allowing them to sleep. Interestingly, these instances are some of the few listening episodes where we see low arousal states as desirable (*Relaxation* functions also display this quality). In these instances, the content of the music appear particularly important. P041 raises the importance of slow tempos to construct a relaxing space in which to sleep. Although no discussion of volume in the sleep episodes is present, the assumption is the volume is not loud or excessive.

v. Environmental Control

From the study data 22 instances of the *Environmental Control* function were identified. The ESFs occurred most frequently in the workplace environment (10 instances) performing work-based activities (13 instances); these activities and locations were identified as significantly associated with the function in the contingency table analysis (both $p < .001$). No other activities or locations were identified as significant in the contingency table analysis.

The descriptive reports submitted by participants present as expected in such a function. Many participants refer to “blocking out”, “tuning out”, “drowning out”, “masking out”, or “cancelling out” external influence. However, the focus of the blocking action varies between two concepts. Firstly, participants speak of wishing to block out extraneous noise. P022 reported “it cancels out the surrounding noise”, and P072 suggested “it helps to block out any background noise”. An alternate action is also often performed with participants electing to block out other people in the environment. P044 reported employing the function to “block out other people”. The same participant also reported they employed the function “to block out commuters”.

The blocking operation performed by participant was often accompanied by an objective, rather than to simply obfuscate external noise or individuals. Participants appear to employ music to distract *from* or to focus *on*. These directive actions are referred to frequently within

the ESFs. P061 reported listening as a “distraction from the general public”, and P050 reporting “I can use it to block out distractions”. Conversely, participants reported employing the blocking mechanism to improve focus. P010 stated they employed the musical stimuli “to allow me to focus on the work rather than interacting too much with my friends working around me”. P007 reported similar results; “the music helps me block out noise from the rest of the research centre and focus on my own readings”.

vi. Pacing & Movement

The study identified 28 instances of the *Pacing & Movement* function. The function was most frequently employed whilst travelling (11 instances), and in both exercise and musicking (4 instances each). The remaining instances were distributed across chores, personal maintenance, recreation, and work-related activities. The function was found to be significantly associated with exercise in the contingency table analysis ($p < .001$). The function was most frequently employed in work-place environments (6 instances), transitory spaces (6 instances), at home (4 instances) or at the gym (6 instances). Gym locations were found to be significantly associated ($p < .001$) with the function in the contingency table analysis, relating to exercise activities as previously discussed. No other activities or locations were identified as significant in the contingency table analysis.

Two primary themes were identified in the descriptive reports submitted by participants. The first theme concerns the notions of movement and speed. Participants reported that the listening episodes altered the speed at which they moved. P003 reported “When I listen to music when I’m biking it gets me from one place to another a lot faster”, and P004 stated they employed music to “keep me walking quickly to catch train”. In these instances, participants are employing music to increase the rate of their physical movement from place to place. In more extreme examples, there is evidence of participants using music as a pace-setting mechanism. P010 reported using music of a “relatively high tempo to match my walking speed”. In this theme, music takes on the role of a metronome, allowing individuals to match movements to a specific auditory stimulus. To reinforce the point further, there are no instances of individuals using music to *slow* their movement in these instances, with a general focus on quickness, speed or tempo.

The second grouping of ESFs concerns exercise. 6 instances of the function were reported within gyms or fitness centres. These episodes expressly relate the importance of pacing as part

of exercise, and music is employed again in a similar manner to the previous theme. However, in these instances the focus of the engagement is not on speed but rather regularity. Maintaining a specific pace in exercise is beneficial to sustained exertion rather than a rushed and possibly unsafe exercise activity. In both of the primary themes exposed by the descriptions, *Pacing* functions take an assistive role in the listening episode. P055 reported employing music to “help to pace exercise”, a view that was echoed by P057 and P070. In many of these engagements, control levels are rated at 0, with the accompanying explanation that the gym instructors had specifically selected music to set the pace.

vii. Physical Discomfort

Only 2 instances of the *Physical Discomfort* function were identified. P004’s ESF occurred whilst traveling, and the activity was classified as unknown. This unknown category was found to be significantly associated with the function in the contingency table analysis ($p < .001$), however, this is an issue resulting from the categorisation and coding of participant responses, and a lack of detailed ESFs. The second instance was from P061 and occurred in the home environment while performing chores. No other activities or locations were found to be significantly associated with the function.

Despite the limited data identified in the study concerning this function, the two descriptive reports offer an interesting insight into possible deployments of the function. In the first instance (one of the more unusual and unexpected ESFs recorded in the study), P004 described wishing to provide “a stressful environment for 2 rabbits”. Given potential ethical issues this might raise, a request for clarification was sent to the participant via email (the only instance of direct contact with a participant concerning their ESFs). The participant explained that loud metal music had been employed to slightly stress 2 rabbits with a view to forcing the rabbits to bond. Thankfully, this is a recognised technique known as “stress bonding”. The participant reported that during and after the “stress bonding” listening episode the rabbits had ceased their aggressive behaviour towards one another. Although this was not an aspect of function of music that had been foreseen or suggested in the previous literature, it does exhibit the hallmarks of *Physical Discomfort* deployment; causing discomfort or stress to another, high volumes and aggressive content, and leading to a desired outcome.

The second instance, reported by P061, described a more typical deployment of *Physical Discomfort* functions. The participant reported “I wanted something to play really loud and

piss off the neighbours while I cleaned”. In this instance the participant employed music at loud volumes to cause discomfort or stress to another (likely a continuation of a feud rather than the opening volley). The report finished in a manner typical to these situations; “They knocked on the wall a few times. I got my cleaning done”. Again, the hallmarks of *Physical Discomfort* are clearly displayed: causing discomfort or irritation to another, high volumes were employed, and resulted in reinforcement for the participant through acknowledgement of the neighbour’s agitation.

viii. Structuring Time

There were 37 instances of the *Structuring Time* function identified within the study. The function was most frequently reported during travel (13 instances) but also during personal maintenance (5 instances) and work activities (7 instances), with fewer instances distributed amongst other activities. The locations where the function was most frequently employed reflect these activities; transitory space (12 instances), home (17 instances), work (4 instances). No activities or locations were found to be significantly associated with the function in the contingency table analysis.

Two distinct themes were identified within the descriptive reports supplied by participants. The first theme shall be termed ‘passing time’. P035, P036, P061, and P070 stated they employed music “to pass the time”. Further to this, P059 and P067 both referred to employing music to “kill time”. P048 suggested the choice of the music somehow enabled the time to pass: “It has a sort of ‘*passing the time*’ feel to it. and distracts me from the wait”. The notion of passing the time was further elucidated by additional descriptions related to perceived time and distance changes. P034 stated they employed music “to make the journey go faster” and P070 stated “it made the journey feel shorter and more enjoyable”. In this first theme, it appears music is drawn into action to alter an individual’s perception of time or distance. By engaging with musical stimuli, participants draw focus from wait times or the normal passage of time and toward the music. Music essentially acts as a distractive stimulus that allows the individual to either forget about the passage of time or be less concerned about the passage of time. However, P035 reported “they helped me pass the time, though they did impact on concentration”; showcasing the potential detrimental side effects that the function could offer.

The second theme shall be termed ‘task tracking’. In this second type of employment, use music to raise their awareness of the passage of time with a view to more accurately gauging

time. Simply stated; music becomes an auditory stopwatch or timer. P010 displayed a particular affinity with this function. 3 of their instances employed music as a guide to accurately time the length of their showers, presumably due to limited preparation time before work. P001 also displayed a similar approach to finishing a set of work tasks, using a limited playlist as a target to complete tasks before the end of the playlist.

5.7.6 The Social Functions of Music

i. Approval & Cultural Capital

Only 3 instances of the *Approval* function were identified within the study. These ESFs were reported in workplace scenarios, whilst relaxing or recreating, and at home. Locations reflect these activities, with cultural locations found to be significantly associated with the function in the contingency table analysis ($p < .001$). No other activities or locations were identified as significant in the contingency table analysis.

The lack of data makes interpretation difficult. However, it is possible to offer some analysis of the descriptions offered by participants. P035 used the music to greater connect and “fit in” whilst in a new environment. The participant reported the music allowed them to acclimatise to a new country by engaging with the cultural materials of the location. In another instance P069 reported selecting music for an office environment to increase their popularity and acceptance in the work place. Participants appear to report this function with a degree of hesitancy and without the openness associated with other functions; it is possible the participants view their employments as cynical or manipulative.

ii. Boundary Demarcation

The *Boundary Demarcation* function was only reported in 2 ESFs. The two instances were reported during work-based activities, with one occurring in the workplace and another within the home environment. No activities or locations were found to be significantly associated with the function in the contingency table analysis.

P006 reported their goal was “to avoid unwanted conversation” and P010 reported wishing to “avoid talking to others working around me”. The participants in this situation specific use musical materials and its associated technologies to construct an identifiable, physical barrier between themselves and the outside work in the form of headphone listening (both participants

reported the instances using mobile subscription listening, thus headphone listening is the assumed mode of engagement).

iii. Communication

Given the inordinate amount of cultural commentary about the communicative ‘power’ of music, the *Communication* function occurred rather infrequently within the study with only 8 instances reported by participants. All but two of the ESFs were reported as occurring within the home environment, and the primary activity was socialising (5 ESFs). Socialising activities were found to be significantly associated with the function in the contingency analysis table ($p < .001$). Furthermore, the home of friends was found to be a significant location in the contingency analysis table ($p < .001$). No other activities or locations were identified as significant in the contingency table analysis.

A difficulty arises when examining the characteristics of the *Communication* function. Even at the founding of the field of the functions of music, Merriam stated the function was the “least understood” (Merriam, 1964) of all the functions of music. Little has changed since Merriam’s original publication. In the data gathered from the study, the most easily identifiable theme is that of the function aiding verbal communication. P067 suggested the musical stimuli “aids communication” between a group. P071 suggested it was most useful when it took the role of “background noise” to allow conversations to occur. This background noise concept may link strongly with the *Atmosphere* or *Background* functions from the meta-domain. The background qualities of the musical materials allowed “variety while chatting” for P015 and could “encourage... conversation” for P004.

Furthermore, there was one example of music as the topic of conversation or communication. P006 used music as a means of demonstration as “a good example of the artist we were discussing”. In this instance, the music is both the facilitator and topic of conversation. The details of the conversation were not reported, but it is possible that the individual was using music to demonstrate musical concepts or aspects of the material.

iv. Control & Conformity

Only 2 instances of the *Control & Conformity* function were reported. Both instances of the function were during working activities, with one in the workplace and one in the home. No significant associations were found in the contingency table analysis for locations or activities.

The descriptions reported by participants do not offer a great deal to further elucidate the function. P069 refers to the mediation in music selection from surrounding office workers (the medium was radio), potentially with a view to ‘pleasing everyone’ or finding a centre ground to fit everyone’s tastes and aesthetic preferences. P010 displays the function from the alternative perspective, using music as a means of behaviour modification in others. They selected music to discourage conversation and fill space that may have been taken with verbal communication. In this second instance it is tempting to view the *Control* function as somewhat akin to the *Silence Avoidance* function, but this is likely an isolated case and does not connect well with the established theory of either function.

v. Interaction & Bonding

The *Interaction & Bonding* function was the most frequently reported function within the Social domain. The function was reported by 10 participants. The ESFs occurred most frequently within the home (8 instances) with the remainder reported most commonly in cultural locations and workplaces. Given the nature of the function it is unsurprising that the most common activity was socialising (8 instances) in addition to recreation and relaxation. Both the activity of socialising and the cultural site location were found to be significantly associated with the function in the contingency table analysis ($p < .001$).

The main thrust of the descriptions provided by participants concern the social nature of the function and are viewed in a positive light by all participants. In this function music is perceived as a facilitator; in aiding social interaction. For P006 the listening episode allowed them “to share music with someone”, and for P060 the music allowed interaction between parent and child through singing and music relates games (the participant does not specify details). The words “social” or “socialising” was used by P027, P028, P067, P068 and P071.

Others highlight the importance of shared reference points. P004 spoke of sharing joint memories with their partner, and P067 highlighted that music “aids... socialising if you’re listening to music that everyone knows in a group”. Further to this, the language used to discuss external influencers was generally positively valenced in tone. Participants carefully considered the tastes of their social group in these situations; P071 purposefully selected “music they might like” to satisfy their friendship group.

Regarding the final point concerning language, P039 was particularly instructive with respect to romantic interpersonal relationships. The participant selected music “to set a romantic mood” with the music choices “designed to appeal to (their) partner”. Interestingly, in this highly-mediated selection process, they rated their awareness and effectiveness at maximum (10). In this function, awareness of external influences and awareness of the mediation may lead to greater efficacy. The function’s very purpose is to allow for interaction through music, hence consideration and awareness may well be key to a successful interaction.

5.7.7 The Identity Functions of Music

i. Personal Development & Understanding

Only a single instance of *Personal Development* was identified in the study. The location (cultural location) was identified as significantly associated with the function in the contingency table analysis ($p < .001$). However, given the singular incidence of this function further examination or extrapolation would be extremely positivist and inappropriate. No other activities or locations were identified as significant in the contingency table analysis. The instance concerned a baby sensory play experience. Whether this listening episode actually represents an instance of *Personal Development* function employment is open to debate, however, it is important to note that the individual stated that music was “good for baby’s development”. The aim of the listening session was to aid in a baby’s sensory development and interact with other children. Whilst there is clearly some “development” and the function definition suggests that musicking can aid in maturation, this is perhaps an extreme example.

ii. Promote Autonomy & Agency

2 instances of the *Promote Autonomy* function were reported in the study. The function was reported whilst traveling and working, with their consonant locations also identified by participant. No activities or locations were identified as significant in the contingency table analysis.

The descriptions provided by participants are some of the more amusing and insightful ESFs, even given the limited data collected concerning the functions employment. P007 reported that “I feel cool when I listen to rap in public” because it helps make themselves “comfortable among strangers”. There appears to be a link between the music and the participant’s self-perception, as is predicted in the function’s underpinning theory. P058 suggested the function

made them “behave more strong” and made them “feel powerful”. These concepts of strength and self-belief link to the ‘sonic superman pose’ (as suggested by Elvers, 2016).

5.8 Situational Variables

The review of individual functions identified in the ESM study data brings together detailed qualitative and thematic analyses (where data permits) to conjure as accurate and extensive a description of each function as possible. The analysis of each function also calls into question where the participants were during their functional listening episodes, and what activity they were undertaking or participating in. These discussions readily reference contingency table analyses²⁰. Such contingency table analyses allow an alternative viewpoint on the material, opening the door to a broader analysis of functional listening grounded in a particular listening episode or environment.

Some previous research reviewed in chapter 3 was criticised for the lack of connections drawn between both activities and locations, and also the lack of connections between those contextual variables and the functions occurring within or around them. Some literature, particularly within Sports Science, has posited the use of music to fulfil particular functions within particular contexts i.e. motivation to aid with running activities in sporting environments such as the gym. However, the vast majority of functions are not discussed in such a manner; rather the function is merely listed or described, and the associated contextual features are not revealed. Thankfully, the work of Amanda Krause (see Krause and North, 2014, 2017b; Krause, North and Hewitt, 2016) has begun to establish some of these missing linkages, however, the field in broad terms remains unmapped.

The lack of such established connections in the literature may be a repercussion of the consensus issue this thesis directly addresses, or it may simply be an area that has not been investigated with any fervour. However, given that functions in this thesis have been conceptualised as a product and response to music-facilitated goal attainment listening (i.e. are goal-orientated in nature) and that listening is conceptualised as a response to, at least in part, situational variables, then the necessity to investigate the elements of contextual variables as they pertain to functionality is paramount. As such, through a concerted investigation, the raw ESM data and the functions emerging from the sorting processes have been analysed to reveal significant associations between functions, locations and activities; something that has not been attempted previously in similar research. Indeed, it is possible that these situational features

²⁰ Original data and analyses available by request.

may present an avenue for further exploration and link directly to the use of particular functions at particular junctures in everyday life.

Contingency table analyses allow us to examine which particular situational variables (location and activity) are significantly associated with particular functions. If we can identify which situational variables are associated with certain functions, we may be able to offer a triangulation of all three of these sets of variables from the Reciprocal Feedback Model (location, activity, and function).

5.8.1 Locations & Functions

Through a series of contingency table analyses, it has been possible to identify which functions were significantly associated with specific locations in the ESM data. As such, we can infer that certain functions are likely to resonate with or occur in specific locations. As discussed in the methodology for the ESM study, both the locations and activities used in the ESM study coding and subsequent analyses were drawn from the comparative analyses (conducted in chapter 2.3.1). However, several locations occurred in the data rather infrequently. Indeed, as made clear in Figure 30 the only locations that occur with considerable frequency were home (277 ESFs), transitory space (181 ESFs), and work (79 ESFs). The remaining locations did not provide a substantial body of data from which to extrapolate, and as such, the contingency table analysis should not be considered generalisable to wider populations.

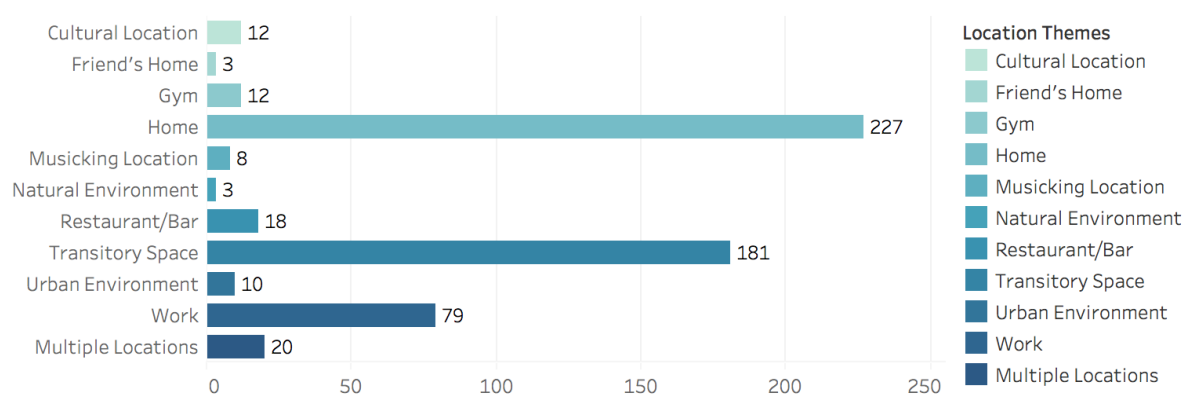


Figure 30 Frequency of locations reported in ESM data

The functions included in Table 5 are those which the contingency table analysis identified as significantly²¹ associated with the location. The functions display a striking level of prototypicality with their location in many instances i.e. *Focus & Concentration* and *Environmental Control* functions are employed in a workplace environment to allow the listener to more efficaciously achieve the task at hand; or *Motivation, Activation, Arousal & Response*; and *Pacing* functions are all found within the gym, allowing listeners to use music to improve their exercise experience. Whilst for some functions, the contingency table analysis results may not be generalisable (particularly those listed as infrequent in Figure 27), those functions that pertain to home, transitory space, and work have a strong grounding in the data, and are unlikely to be a consequence of the contingency table analysis, data sorting, or data collection procedure.

However, as noted in chapter 2's discussion of situational variables, it might be wiser to perceive location as a product of the activity, rather than a driver for it. Whilst this data provides an inference that prototypicality might appear to be 'in play' here, there is a significant part of the picture missing from this analysis when taken in isolation. As such, to engage with functions more readily, an examination of activity is also required.

²¹ Adjustment for multiple comparisons: Bonferroni. Sig.=0.00454

Location	Significant Associated Functions						
Cultural Location	EmoEscapism	MetaMusicki ng	PhysDancing	SocApprove	SocInteract	IdenPersona l	
<i>P value</i> =	0.000151	<0.0001	0.000151	0.000151	0.000168	<0.0001	
Friends Home	MetaBackground	SocGCommu n					
<i>P value</i> =	<0.0001	<0.0001					
Gym	CogMotivation	PhysArousal					PhysPacing
<i>P value</i> =	<0.0001	0.000377					<0.0001
Home	CogDistraction						
<i>P value</i> =	0.001095						
Musicking	MetaMusicking						
<i>P value</i> =	<0.0001						
Natural Enviro	N/A						
Restaurant	MetaAtmosphere						
<i>P value</i> =	0.000149						
Transitory Space	CogDistraction	PhysAccomp any	CogHabitual	MetaCompany	MetaMatching	CogFocus	
<i>P value</i> =	0.00372	<0.0001	0.001079	0.000391	0.001068	<0.0001	
Urban Enviro	MetaSilence						
<i>P value</i> =	0.000286						
Work	CogFocus	EmoEntertain	PhysEnvCon				
<i>P value</i> =	<0.0001	0.001981	<0.0001				

Table 5 Locations contingency table analyses summary

5.8.2 Activity & Functions

A similar battery of contingency table analyses were conducted on the activities reported by participants in the ESM study. The contingency table analyses identified a series of functions significantly²² associated with the activities. As with the previous analysis, there may not be the quantity of data required to extrapolate accurate associations. An overview of frequencies is shown in Figure 31. Certainly, travel (180 ESFs) and working (115 ESFs) provide a considerable quantity of data points, as may chores (55 ESFs) and relaxing (47 ESFs). However, as with the previous contingency table analysis summary, caution should be exercised when considering the transferability of these findings beyond this bank of participants. Concerning those activities that were most frequently reported, several display similar functions

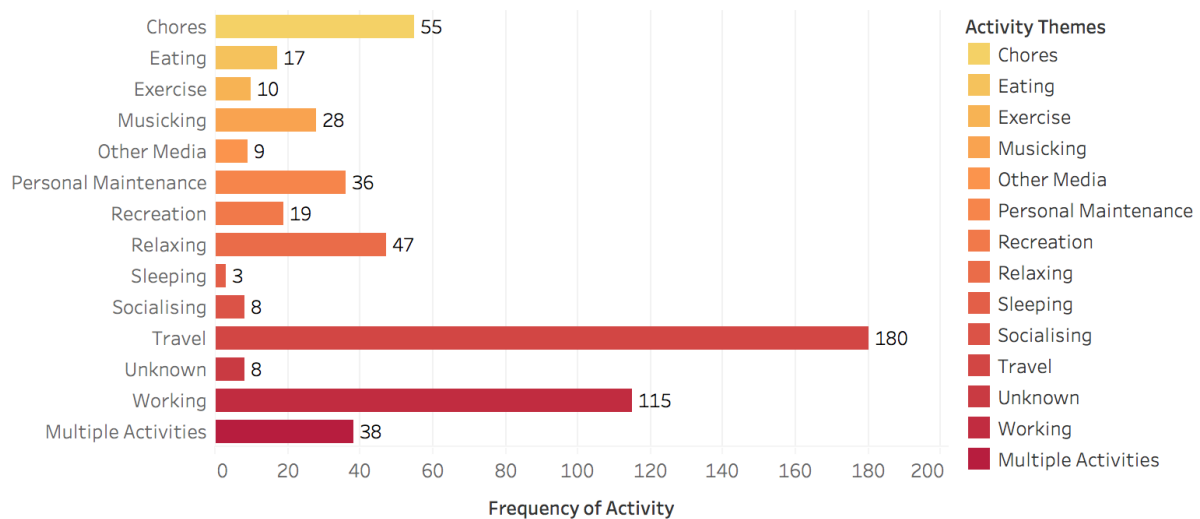


Figure 31 Frequency of activities reported in ESM data

to those that were reported in the relevant locations in the previous contingency table analysis summary. Activities, like locations, appear to display significantly associated functions that are somehow indicative of the activity or goal at hand i.e. chores are performed and participants deem *Distraction* a useful function to distract from the task at hand, or the *Enhance Activity* function is employed whilst sleeping. Some significantly associated functions are particularly consonant with the activity; most notable is the *Relaxation & Stress Relief* function that was significantly associated with the relaxation activity. Whilst this is expected, it does suggest that some functions may have particular activities where they are most appropriate or ‘on the

²² Adjustment for multiple comparisons: Bonferroni. Sig.=0.00357

agenda' (Sloboda, 2005b, p. 204). It also lends weight to highly specific and specialised functions i.e. earworm fulfilment, that appear to have limited flexibility.

With both location and activity showing a degree of prototypicality (again location and activity being associated with or somehow representative of the other) with specific functions (see Table 6), it may be possible to offer an additional experimental analysis that could extrapolate the findings further.

Activity	Significant Associated Functions						
Chores	CogDistraction	MetaCompany					
<i>P value =</i>	0.001622	0.001038					
Eating	N/A						
Exercise	CogMotivation	PhysEnhance	PhysPacing				
<i>P value =</i>	<0.0001	<0.0001	<0.0001				
Musicking	MetaMusicking						
<i>P value =</i>	<0.0001						
Other Media	CogReflection						
<i>P value =</i>	0.00279						
Personal Maintenance	PhysArousal						
<i>P value =</i>	0.003127						
Recreation	N/A						
Relaxing	EmoSRSSTrigger					MetaRelaxation	
<i>P value =</i>	0.000774					<0.0001	
Sleeping	PhysEnhance						
<i>P value =</i>	<0.0001						
Socialising	CogEarworm	MetaAtmosphere	MetaBackground	SocCommunicate	SocInteract		
<i>P value =</i>	0.002808	<0.0001	<0.0001	<0.0001	<0.0001		
Travel	CogDistraction	CogFocus	MetaCompany	PhysAccompany			
<i>P value =</i>	0.00126	0.000319	<0.0001	<0.0001			
Unknown	PhysDiscomfort	MetaMusickingApp	CogAestheticisation				
<i>P value =</i>	<0.0001	<0.0001	<0.0001				
Working	CogCreativity	CogFocus	PhysEnvControl				
<i>P value =</i>	0.00064	<0.0001	<0.0001				

Table 6 Activity contingency table analyses summary

5.8.3 Prototypicality & Triangulation

A criticism of some previous taxonomies of function reviewed in chapter 3 was the lack of interconnectivity and exploration of functions occurring within the context. There are very few attempts in the extant literature that identify which groups of activities or locations are related to which functions. With the above contingency table analyses and the data gleaned from the ESM study, it is possible to identify certain functions that are significantly associated with activities and locations. Furthermore, it is possible to suggest certain locations and activities are prototypically associated with one another i.e. household chores are typically associated with the home, exercise would be associated with the gym, or work tasks with workplace environments. By exploiting such prototypicality, it was possible to triangulate functions that are significantly associated with such prototypical situations.

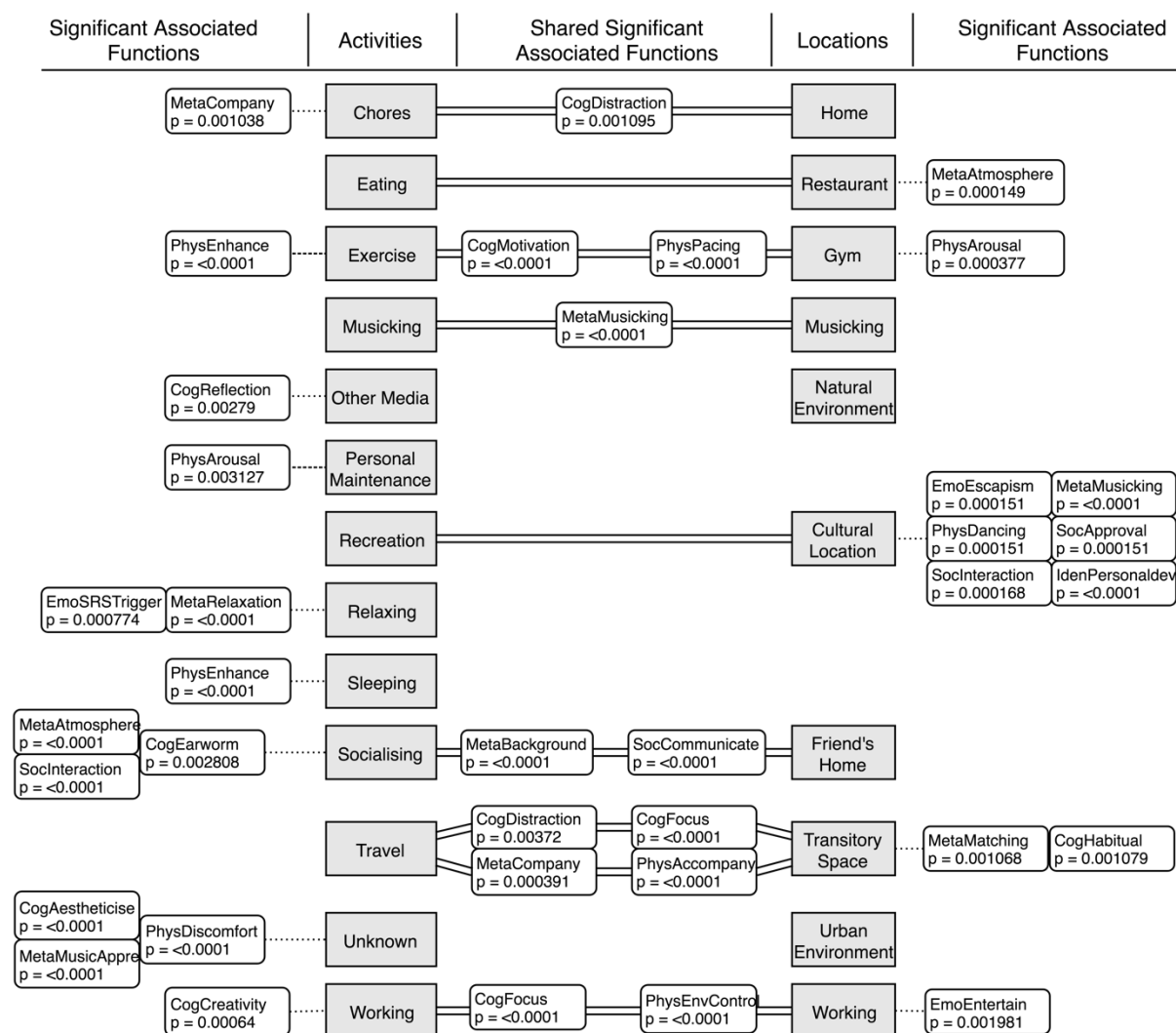


Figure 32 Triangulated contingency table analyses

The prototypicality suggested here is based on the frequencies of the incidence of different activities occurring in differing locations across the ESM study. A table that shows the cross-references activities and locations in the ESM data is available in Appendix N. Owing to prototypicality, activities and locations are considered to be exclusive and only occur once in the following analysis and were defined by identifying the activity with the highest frequency and associated location.

The visualisation of the triangulation analysis (Figure 32) shows the significantly associated functions that relate only to activities on in the left column and the significantly associated functions that relate only to locations on the right. The centre column highlights significantly associated functions that relate to *both* activity and location. As such, the 12 functions that occupy centre column that bridges between activity and location are associated with both situational variables. The p value of each function is shown²³.

The triangulation found 6 prototypical situations with 12 significantly associated functions identified across the situations. The shared associated functions that were found shed particular light on the contextual aspects of the individual listening episodes that exist within the triangulation of activity, location and function. While some may appear very obvious (i.e. *Musicking* functions allow musicking activities to happen in musicking locations), others offer more insight e.g. work environments requiring both *Focus & Concentration* and *Environmental Control* activities is particularly telling as it pertains to modern work environments. Furthermore, a series of highly significant findings allow us to perceive many of the functions that are readily associated with travelling. It would seem in this instance, that engaging with the travelling experience is of little interest to participants, rather their attention is allocated elsewhere.

The most notable aspect of the triangulated analysis summary is that it is entirely novel. The studies explored in chapter 2 and 3 have not directly addressed the triangulation of function, activity and location, and have left the contextual variables relatively unmapped. This methodology offers a potential route to explore the contextual triad more thoroughly in future work. Certainly, the findings here are somewhat rudimentary in nature, but they do begin to map the actions and spaces of music-facilitated goal attainment listening as it occurs in the real

²³ Adjustment for multiple comparisons: Bonferroni. Sig.=0.00357

world. Its value as a set of findings that can offer interesting insights into the data collected in this particular thesis is clearly limited, but it can offer a possible manner by which to make meaning strides into the research into contextual variables and their role in listening episodes. This is an important step in allowing our understanding of context in listening to develop beyond simplistic categorisation, and into a more holistic, interconnected space of exploration.

5.9 ESM Functions: A Summary

In summary, the functions identified in the ESM data, and the contextual features and relationships that were identified offer an insight into the real-world employment of functions by real listeners within contexts (albeit simplistic contexts); not into the generalised and compartmentalised conception of functional listening as presented in much of the functions literature. Primarily, it offers a view of functional music-facilitated goal attainment listening that is in no way restricted by the pharmaceutical model (Sloboda, 2005). The review's primary strength is grounded in its locus of study: the real world. The ecological validity of the ESM study and consequent functions and situational variables allows a picture of active, participatory functional listening to develop.

However, the ecological validity and the free conditions of the study bring with them issues. ESM studies such as this lack any external validity, in that these findings can only ever be applicable to those individuals who participated on those days in which they submitted ESFs. Attempts to extrapolate outwards from a limited pool of participants and data would likely result in a high level of inaccuracy when applied to the general population. We certainly cannot state that all instances of a certain function likely occur in a significantly associated location, irrespective of the strength of the contingency table analysis. Further compounding this issue is the purposive sampling of participants that was undertaken, being a narrow section of primarily 'highly engaged' music listeners.

Yet, to suggest this data is without merit would be foolhardy. Whilst the specific frequencies of different functions should not be taken as representative of wider populations, the functions in play here should be taken as generalisable. There is no evidence presented anywhere within the functions literature to suggest that differing populations across the western societies do not have access to the same functions. There is some evidence that age and rehearsal can influence which functions certain individuals employ more frequency (particularly van Goethem, 2010), there is no evidence that certain functions are 'restricted' to populations, demographics or

other groupings. As inferred by van Goethem (2010), highly engaged listeners may have a wider repertoire of functions to draw upon as a consequence of their engagement. Given this, the purposive sampling methodology is likely to have been the correct decision as it may have allowed those less common, less frequent functions of music to manifest themselves within the data i.e. more experienced listeners employ a broad range of functions, and thus, more functions were identifiable within the data. As a consequence, and considering the similarities to the ATFF findings, the functions identified in the ESM data should be considered widely applicable.

Further to this, from the data captured, it is possible to shed considerable light on the experience of listeners engaging in music-facilitated goal attainment listening. It is possible to explore the experiences of listeners in a practical and experiential manner from the data gleaned, and thus provide a strongly contextualised description of functions and their possible ramifications. Also, it has been possible to explore the language used to describe functional listening and gain valuable, highly qualitative insights into the experience of functional listening.

The chapter has also identified a manner by which the contextual triad can be interrogated, and the role of particular functions in relation to activities and location were partially revealed. Whilst the findings presented in this section were rudimentary, the approach to investigation has evidenced that associations can be readily identified if appropriate data has been captured. Furthermore, it evidenced that prototypicality is a key element that appears to influence triangulations of function, activity and location. Although this requires further investigation beyond this thesis, it is the first time such an analysis has been performed in this area of research.

Yet, whilst the ESM data provides interesting and highly useful data, it does not solve the broader problem of consensus proposed by this thesis. It merely represents a block of data locked within the temporal and geographic loci of the study. It has revealed possibly new functions, shone light into the listening behaviours of a group of highly engaged listeners, and provided a methodology for tracking possible contextual variables in listening episodes. It has not achieved a consensus. At a cursory glance it is possible to identify both resonances and dissonances between the ESM study and ATFF functions. How then might a final consensus that propounds to be extensive and exhaustive be constructed?

6.1 Consensus Functions Framework

Burn down the disco
Hang the blessed DJ
Because the music that they constantly play
It says nothing to me about my life

- *The Smiths "Panic" (1986)*

A significant portion of this thesis and its experimental methodology has been targeted at the eventual construction of a consensus. Firstly, a pseudo-consensus was constructed through a large bibliometric study of the current research literature into the functions of music. From the findings it was possible to construct a taxonomy of functions and a qualitative review of each function. Whilst this consensus has not been expressly agreed by other researchers, it does represent the most exhaustive picture of the current state of research without repetition or replication. The second study in this thesis explored the experiences of real-world listeners in ecologically valid contexts using experience sampling methodology. From the participant reports another taxonomy of function was constructed and a qualitative review of each function was created. However, these two different studies have not been directly compared or combined as of yet.

Both studies used a similar approach to construct the taxonomy. This methodology (primarily inductive semantic coding followed by iterations of latent coding) was replicated for several reasons. Firstly, it is the most appropriate way to deal with both datasets. Secondly, it would allow for stronger links to be drawn when comparing or combining the two datasets. Thirdly, it allowed for language across both studies to be maintained where possible. With a robust and consistent methodology applied to the previous studies, and the resultant parity that brings with it, it is now possible to construct a taxonomy of function that pulls data not only from theoretical, qualitative and quantitative sources, but also from the real-world lived experience of highly-engaged and reflexive listeners. Therefore, it is now possible to analyse and combine findings from the two studies to construct a refined final taxonomy of the functions of music that is the broadest and most comprehensive review of functions available.

6.2 Consensus Sorting Methodology

The methodology for combination of these two taxonomies into a final taxonomic framework was significantly less complex than the sorting methodologies employed in defining the initial

taxonomies. This is likely a consequence of the scrutiny, sorting, coding and filtering processes the data has already been subjected to. Further aiding the combining process comes from forward planning performed in the ESM study design and sorting methodology when similar concepts were named using similar or identical names. The qualitative descriptions created in both the bibliometric study and the ESM study provided an invaluable source of additional information in this regard. As such, a simple combining method was defined and followed (see Figure 33).

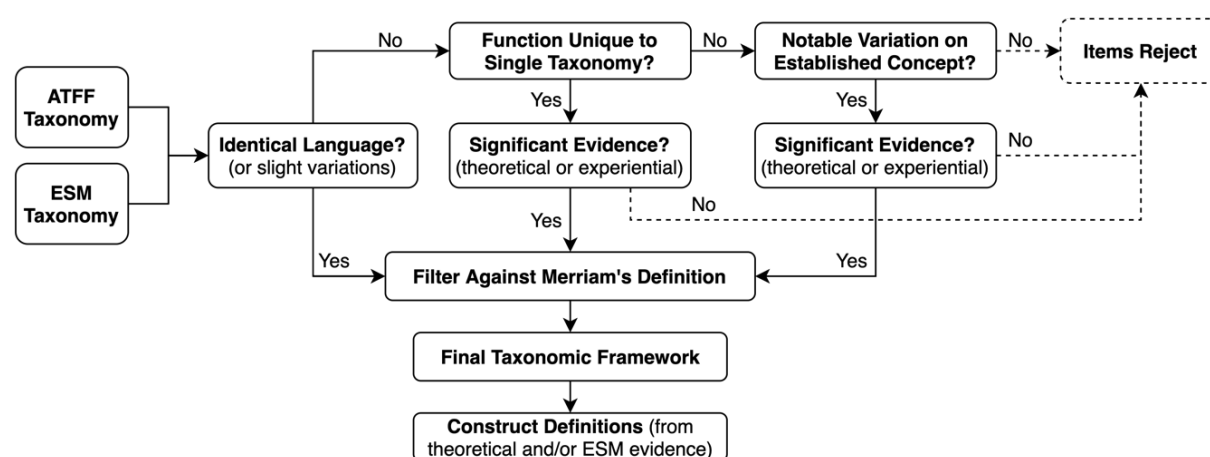


Figure 33 Combining methodology for ATFF and ESM study functions into a single taxonomy

Combining the frameworks began by identifying functions within domains that were identical across both frameworks. These represent areas of parity between frameworks and were considered to be stable concepts. Each of these identical concepts was combined into one final function. For example, *Distraction* was identified in the cognitive domain in both the ATFF and ESM taxonomy; this was combined into *Distraction* in the cognitive domain. No further adjustments were made to these identical functions. It should be noted that some instances included slight alterations in phrasing (*Aestheticisation & Filmic Listening* in the ATFF and simply *Aestheticisation* in the ESM study), although the underlying concept remained the same. These slight variations were disregarded and combined into one final function where appropriate. 36 functions were identified in both frameworks and included in the final combined framework.

Nine functions were identified in the ATFF but in the ESM study data. These functions have a significant quantity of evidence in the source scholarly research which was examined in detail in the qualitative descriptions of the ATFF. As they all fulfil Merriam's criteria to be considered a function these have been included. The ESM study identified included three functions that had

no evidence in the ATFF. However, it is believed that these represent novel functions in the field of functions research and are one of the key findings in this thesis. Participants provide a wealth of description concerning how these functions operate and they fulfil Merriam's criteria to be considered a function. These have been included.

Several functions were identified in the ESM study that had similar concepts in the ATFF data but owing to the deeper descriptive quality it was possible to parse these functions into more granular and more specific delineations of a function. These are considered 'sub-functions' and are explored in further depth later in this chapter.

One function that was identified in the ATFF was not identified in the ESM data. It also was not found to have substantial supporting evidence in the qualitative description provided in the ATFF and thus did not meet the criteria to be considered a valid function according to Merriam. As such, this function was excluded from the final taxonomic framework. The possible reasons for the lack of evidence in this case are discussed in latter sections of this chapter.

A short definition of each function included within the final taxonomy. These definitions have been constructed using the qualitative descriptions found in both the ATFF and ESM studies. Each definition includes a single sentence description of the outcome of the function. This is followed by approximately two sentences of additional information that adds further clarity or nuance to the function definition.

Example: Constructing a Definition of 'Relaxation & Stress Relief'

"Music employed to reduce stress and/or allow for relaxation. The function may act on cognition, emotions and physiology simultaneously or exclusively. Music provides a coping mechanism, allowing stressful factors to be neutralised (temporarily or permanently), and provides the listener a means to alter their perception of stressors."

The first sentence attempts to summarise the basic role of the function for listeners from the qualitative descriptions provided in the ATFF and ESM studies. The second sentence provides an overall description of the domains in which such a function can operate. This again is reinforced by the taxonomic codings of both studies. The final sentence incorporates common phrases, words and sentiments expressed by listeners during the ESM study. Several participants suggested music 'helped them cope', and 'reduced stress'. Furthermore, some participants also suggest it allows them to 'change how they see their stressful situation'. All of these are concepts are discussed in the qualitative description on the function in the ESM study.

A full overview of each function's definition can be found later in this chapter, as can a series of discussions that explain the impact of the sorting and combining process of the final taxonomic framework. It should be noted that where no substantial data was obtainable from either study, the item was rejected and no definition was constructed.

6.3 Consensus Functions Framework (CFF) & Visualisation

The theoretically grounded ATFF and the ecologically valid ESM data provide the broadest possible array of functions thus far presented in research. Further to this, the comprehensive sorting and combining methodology has allowed a new, final framework to be developed. By combining the evidence collected in both the ATFF and ESM data, this new framework presents an exhaustive and highly specific taxonomy of the functions of music. The Consensus Functions Framework (CFF)²⁴ contains 53 distinct functions (n = 53) apportioned to their relevant domains and maintains and expands the role of the meta-domain for certain functions.

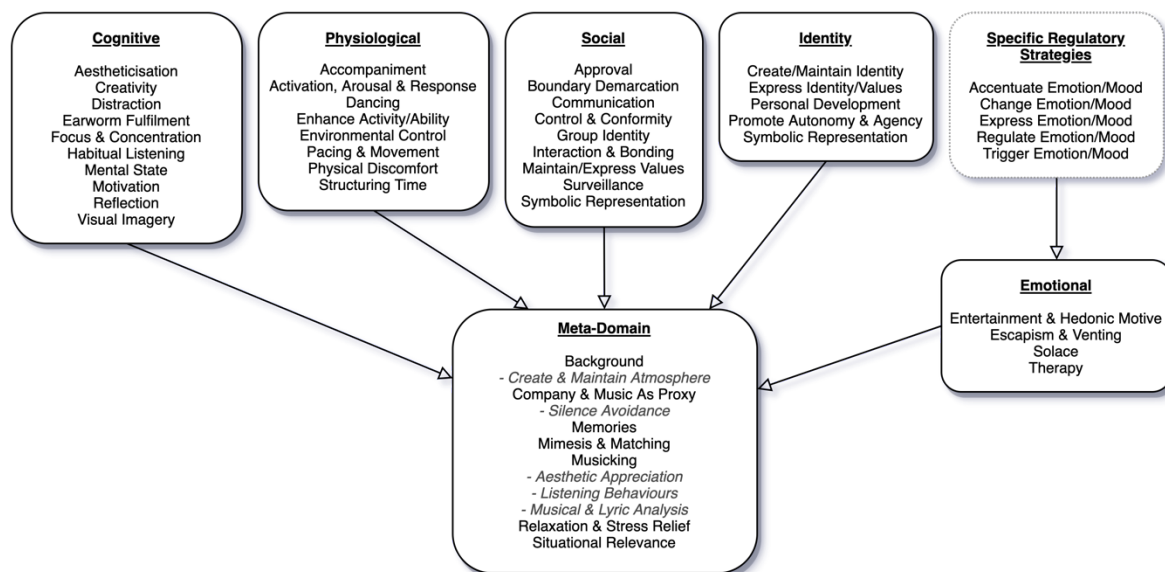


Figure 34 Proposed visualisation of the CFF (consensus functions framework)

Figure 34 visualises the components and domains within the proposed consensus functions framework. The CFF does not include a frequency for individual functions. Frequency would

²⁴ A preliminary version of this framework (titled the Extended Functions Framework, or EFF), has been published (see Maloney, 2017), however, this earlier framework merely combined both the literature analysis and ESM study findings into one framework without the additional interpretation presented in this chapter and in this summary.

be an aberrant inclusion here, as it would be based merely on evidence within a limited body of literature or taken from the ESM study that does not provide enough data to allow for relative frequencies to be extrapolated.

Many of the core functions and concepts established in the thematic grounding of Study 1 and the ATFF have been maintained and reinforced as they present with considerable parity in the ESM data. Of particular note is the consistency with which domains and their associated functions were consistent between both studies. Furthermore, many functions identified within the ATFF were identified in the ESM (36 functions were not altered). Nine functions included within the ATFF have been altered, recategorised, or apportioned to other domains. Three additional novel functions were identified in the ESM data (*Earworm Fulfilment*, *Habitual Listening*, and *Mimesis & Matching*) that were not present in the ATFF and its associated literature. These novel functions have been included within the final CFF, apportioned to appropriate domains of action. The three newly identified functions provide a significant contribution to the field of research and have been illuminated previously. Furthermore, the framework has introduced ‘sub-functions’, to provide greater specificity as to action of certain functions. These are italicised under their parent function.

Each of the features of the new taxonomic framework quickly summarised above are detailed in the following sections. The reasoning behind certain decisions (i.e. included functions, absent functions, removal of functions, and sub-functions) is discussed, and the notable features of the framework are explained and delineated.

6.4 CFF Definitions

Some of the functions research (particularly those from a quantitative perspective) are rarely clear about the nature of functions they uncover beyond names or factorisations. As such, this thesis sets out to define the territory of functionality clearly and use both definitions of the concept of function itself (Merriam’s definition in this case) but also develop definitions of individual functions. The definitions presented here have been constructed by drawing on qualitative descriptions constructed as part of the ATFF analysis, and from the qualitative descriptions constructed from the reports of participants during the ESM study.

Multi-Domain Functions

i. Background

Music employed to provide an auditory background or stimuli within a space. Although the function does not specific a mood or atmosphere must be in existence, the music provides additional stimuli within the space. Background music does not necessitate a connection to activity or context.

- *ia. Create & Maintain Atmosphere*

Music employed to construct and maintain an atmosphere in a social setting (occurring in groups or whilst alone). The musical stimulus may add a sense of feeling or ambience to the environment and is primarily employed to ease social interaction. It can also provide cues as to appropriate or desired modes of action for listeners.

ii. Company & Music as Proxy

Music employed to provide a sense of company or companionship for the listener. Listening devices (particularly portable listening devices) act as a physical companion to the listener, and/or the music they provide may act as a substitute for human interaction and social contact to assuage loneliness.

- *ii.a. Silence Avoidance*

Music employed avoid silence whilst alone. Although the music does not behave as a proxy or company, the function removes silence in uninhabited spaces allowing individuals to assuage feelings of loneliness or perceptions of being physically alone.

iii. Memories

Music employed to reference or recall memories. Musical stimuli may function as an aide memoire, but more often functions as an autobiographical reference tool. Listeners may employ music to trigger memories or relive their own past through previously established musical associations. This is particularly relevant for recalling previous phases of identity.

iv. Mimesis & Matching

Music employed to match or mimic a space, place, time or external feature. The function allows listeners to match their listening material to some external programmatic feature (location, weather, time etc.), potentially through auditory mimesis. It may also allow the listener to feel an active, invested part of the situation or to “feel right” in said situation.

v. Musicking

Music employed as part of music making. The physical act of music making (playing, singing, learning, conducting etc.) can be a function of its own. Whilst a significant portion of music making can occur within a cognitive realm, its expression (i.e. music making) is a physical one. This may occur in formal situations (orchestras and bands) or in amateur environments (singing at home, in the car etc).

- va. Aesthetic Appreciation

Music employed to function as a high art object for the purposes of appreciation and scrutiny. Rather than functioning as entertaining material, the musical stimuli is often engaged with through focused listening. Typically, aesthetic appreciation occurs without emotional engagement on the part of the listener, rather functioning as a solely intellectual process.

- vb. Listening Behaviours

Music employed by listeners to further their musical understanding or taste. The function allows listeners to engage with material from an exploratory perspective and may lead to further functions if reused once the material is understood or known by the listener.

- vc. Musical & Lyric Analysis

Music employed as the focus of analytical listening, thinking or behaviour. The function provides listeners with a source of cognitive stimulation, allowing for analytical thinking to occur. The function may (although not consistently) allow individuals to engage specifically with the lyrical constructs of the material for identity creation purposes.

vi. Relaxation & Stress Relief

Music employed to reduce stress and/or allow for relaxation. The function may act on cognition, emotions and physiology simultaneously or exclusively. Music provides a coping mechanism, allowing stressful factors to be neutralised (temporarily or permanently), and provides the listener a means to alter their perception of stressors.

vii. Situational Relevance

Music employed within specific situations to provide clues or cues as to appropriate modes of action. Music may have culturally encoded meanings in specific situations, although these are likely to vary between cultures. Here, music functions as a lens through which listeners can

decode extra-musical semantic directives and reminds listeners as to the appropriate modes of situational behaviour.

Cognitive Functions

i. Aestheticisation & Filmic Listening

Music employed to allow the visual stimuli around them to become filmic. The function sees listeners become a passive observer as the world around them plays out to their soundtrack. Most commonly occurring whilst using portable listening devices, the function allows listeners to observe potential synchronicities between the listening, environment, and perceived notions of mood or emotion (although such emotional factors are not necessarily felt).

ii. Creativity

Music employed to promote or maintain creativity on the part of the listener. Music can function as a source of inspiration for listeners. It can become a tool that allows a listener's imagination to flourish and as a means through which to fantasise. However, this function does not necessitate the occurrence of flow states or mental visual imagery.

iii. Distraction

Music employed as a stimulus to distract from other factors such as current activities and thoughts. It may also be employed to relieve boredom, occupy unused attention during mundane tasks or act when an individual's full attention is not required to complete said task.

iv. Earworm Fulfilment

Music employed to satiate or clear a musical phrase that is 'stuck' in the mind of the listener. Listeners may employ musical materials to fulfil or 'clear' a current earworm. The function allows listeners to remove mental rumination on a piece of music by listening to it thus removing the distraction.

v. Focus & Concentration

Music employed to allow for greater concentration on tasks or engender focus states for listeners. Typically, music may narrow the field of attention or allow individual to achieve a certain level of concentration by blocking out additional distracting stimuli. Music may also allow individuals to achieve a level of flow during their concurrent activities.

vi. Habitual Listening

Music employed on the basis of habit. The function typically occurs when listeners have developed expectant behaviours in particular situations or modes of action. Musical stimuli can function to fulfil learned responses or needs.

vii. Mental State

Music employed to allow listeners to achieve certain mental states. The function allows listeners to select appropriate pieces of music to achieve specific mental states of the listeners choosing. The exact nature of these mental states may not be easily explained but listeners are aware of the specific state required.

viii. Motivation

Music employed to provide psychological motivation. The function allows listeners to select appropriate music to achieve their psychological goals or motivation. This may have repercussions for emotional or physical modes of action by providing a psychological driver leading to further action.

ix. Reflection

Music employed to maintain and further a healthy psychological state. Music functions as a mirror allowing individuals to analyse their own perceptions and behaviours from an alternative perspective. The function may allow for individual to perceive analogous thoughts or feelings within the music and use the resulting articulations to comprehend their own world and themselves.

x. Visual Imagery

Music employed to create spontaneous mental visual imagery. Further expanding on creativity functions, this function allows listeners to construct mental images concerning the music or extra-musical features. These images may be programmatic in nature, entirely abstract, or may offer the individual a means to play out personal scenarios.

Emotional Functions

i. Entertainment & Hedonic Motive

Music employed for enjoyment (entertainment, enjoyment, fun). Here, the function is particularly concerned with creating enjoyment and positive emotional states through musical engagement, rather than engaging with music for cognitive purposes.

ii. Escapism & Venting

Music employed to forget a stimulus or achieve catharsis. Music may provide an alternative source of focus away from the listeners stressors, allowing them to temporarily escape from issues. The function also enables listeners to use music as a tool to alleviate emotional states and vent emotions.

iii. Solace

Music employed to provide comfort or solace to listeners. The function allows musical stimuli to be selected by the individual to provide a sense of comfort or kinship with the music, or to allow and sanction certain emotional states. Although the music is not a presence, it does provide emotional support to the listener, albeit somewhat detached.

iv. Therapy

Music employed as a therapeutic tool to deal with negative emotions. The function can refer to both the clinical contexts of music therapy (within psychotherapy) or more mundane self-administered listening therapy. Listeners may find meaning within the musical stimuli allowing them to relieve negative emotions or mood states.

Specific Regulatory Strategies

i. Accentuate Emotion/Mood

Music employed to accentuate or optimise a listener's current emotion or mood. This function allows listeners to intensify their current state through emotional induction or through concurrent activities leading to an increased or deeper level of emotion/mood.

ii. Change or Shift Emotion/Mood

Music employed to alter or change a listener's current emotion or mood. This function allows listeners to change their current state (or aspects thereof) through emotional induction or through concurrent activities leading to an altered emotional state. This function is typically employed to relieve negative emotions, although it may be used to attenuate positive emotions that are deemed too intense.

iii. Express or Convey Emotion/Mood

Music employed by a listener to make their emotions or mood apparent to themselves or others. The listener may employ music to reflect and reinforce their own mood states. Furthermore, it may also allow individuals to express their states through physical action (crying, laughter, smiling etc.) or through third-party uses of music (mixtapes or music presentation therapy).

iv. Regulate & Maintain Emotion/Mood

Music employed to maintain a listener's current emotion or mood. Here, listeners employ music to maintain or reinforce current states without accentuating or attenuating aspects of their emotions or mood. The function allows listeners to manage their current emotions or mood, whether positive or negative, and preserve it (often in spite of external factors).

v. Trigger or Elicit Emotion/Mood

Music employed to engender a specific emotion or mood state. Listeners employ this function to launch or trigger a specific mood state, often through rehearsed/understood musical stimuli. However, this function may only occur when a listener's mood could be considered somehow "neutral", otherwise listeners are simply performing *Change or Shift* functions.

Physiological Functions

i. Accompaniment

Music employed as an accompaniment or soundtrack to everyday behaviours. Unlike similar cognitive functions, music here is a passive activity used to accompany physical tasks but does not provide a sense of pace. Musical stimuli in this instance somehow improves the activity, and the function is often reported during travelling.

ii. Activation, Arousal & Response

Music employed to alter levels of physiological arousal or engender a physiological/physical response from the listener. The function can occur before, during or after a task allowing individuals to prepare, maintain or readjust their arousal levels as required. Engaging with this function is often a highly conscious decision to allow individuals to positively impact their goal outcomes.

iii. Dancing

Music employed by the listener to provide a stimulus to physical movement classified as dance. Dancing may occur incidentally, but functional employment and music selection may also be a directive action on the part of the listener.

iv. Enhance Activity or Ability

Music employed to improve task performance or reduce perceived effort. In this function music can be employed as a mental tool to alter physiological performance; psychology inducing improved performance.

v. Environmental Control & Aural Filtering

Music employed as a blocking mechanism against the outside world. This function is most commonly reported when listening using portable listening devices. Musical stimuli is drawn into action to block undesirable external auditory stimuli. It may also be used to avoid uncomfortable silences and divest the listener from the location in which listening is occurring.

vi. Pacing & Movement

Music employed to give timing or motion to tasks. Music can be employed as a rhythm-keeping tool for physical tasks or can pace-specific movements. The function also allows for a level of entrainment to occur, with musical stimuli being used to enhance motor control, fine muscle movement, and increase perceived stamina levels.

vii. Physical Discomfort

Music employed to cause physical discomfort to oneself or others. Musical stimuli can be employed to cause physical discomfort through unpleasant high frequency content or using high volume levels. It is most reported in military situations or to control public areas. It is also possible to cause discomfort to oneself to engender emotional responses to further increase physical aggression leading to perceived increases in stamina and strength.

viii. Structuring Time

Music employed as a means of timekeeping by listeners. Musical stimuli can allow listeners to track the passing of time or compartmentalise physical tasks into blocks of time. The function may also reduce the perceived length of journeys and other tasks (likely as a result of distraction).

Social Functions

i. Approval & Cultural Capital

Music employed to garner approval from the wider social group on the part of the individual. The function allows individuals to gain cultural or social capital from the wider group through engaging in listening behaviours deemed socially acceptable. Typically, this function concerns Western art music, but may also be used in subcultural settings to achieve similar outcomes.

ii. Boundary Demarcation

Music employed as an outward signifier of disengagement in social situations. Listeners typically employ music and personal devices to place a perceived wall or obstacle between themselves and other social interaction. The function is a defensive tactic that allows individuals to remove themselves from situations or block unwanted interaction.

iii. Communication

Music employed as a means of communication between individuals and groups. The function gives listeners a tool to communicate meanings, emotions, and thoughts with others, especially ones that are not easily verbalised. Music may also become a topic of conversation encouraging communication and interaction.

iv. Control & Conformity

Music employed to control or modify intra-group behaviour. The function allows culturally coded extra-musical messages to be transmitted to individuals from the wider group concerning acceptable modes of behaviour and compliance. Musical stimuli may be employed as means for behaviour modification.

v. Group Identity

Music employed as a means to construct group identity. Musical stimuli can be employed to align individuals together into a group. The function allows groups to display their values and culture through music to one another, and identify and reinforce intra-group points of resonance and connection. Music functions as a source of collective identity.

vi. Interaction & Bonding

Music employed to allow individuals to bond and interact. Musical stimuli allows for socialisation and belonging to occur. The function allows interpersonal bonds to develop and intensify, and may be employed in familial, fraternal and romantic relationships, providing interpersonal cohesion.

vii. Maintain & Express Cultural Values

Music employed as an outward expression of group or cultural values. The function allows for groups to reinforce and maintain their own cultural values through referencing musical stimuli. The same musical stimuli can act as an outward signifier of cultural values to extra-group individuals.

viii. Surveillance

Music employed as a means to monitor the listening behaviours of groups or individuals. The function allows others to track and qualify the listening behaviours of others, particularly in the digital realm thanks to the arrival of the “celestial jukebox”. It may also allow listening habits to be monetised by commercial bodies.

ix. Symbolic Representation & Difference

Music employed to represent and differentiate groups and individuals. Here, the function allows groups to symbolic represent themselves through musical materials, and further exclude others based on musical preference or group. Musical stimuli can become a totem to allow groups or individuals to differentiate or exclude themselves from a wider group.

Identity Functions

i. Create & Maintain Identity

Music employed as a means to construct individual identity. Musical stimuli can function as a means by which individuals explore and define their own identity. The function aids in the fluidity of identity.

ii. Express Identity & Values

Music employed as an outward expression of an individual’s identity or values. The function allows for individuals to reinforce and maintain their own identity through referencing musical stimuli. The same musical stimuli can act as an outward signifier of identity and values to other individuals or group.

iii. Personal Development & Understanding

Music employed to aid personal growth and development. Musical materials can be employed by individuals to foster personal development and change. The function aids in maturation and increases social, personal, and emotional understanding for individuals.

iv. Promote Autonomy & Agency

Music employed to offer listeners a sense of control and agency. The function allows listeners to increase their feelings of control and allow some form of perceived mental or social emancipation. The function is typically reported in adolescence but is not exclusive that period of an individual's life.

v. Symbolic Representation

Music employed by individuals to represent themselves. The musical stimuli can be employed to symbolically represent or stand-in for an individual in wider social contexts. The function also allows individuals to differentiate themselves from wider groups through engaging in musical materials that are deemed deviant or inappropriate by the wider group.

6.5 CFF Variations

Whilst 36 functions were found in both studies, the CFF taxonomy presents some notable variations from both of the source frameworks. Several functions have been renamed, some have moved domain, some have been reapportioned to be smaller facets of other functions, three entirely novel functions were identified, and one 'function' has been removed entirely. These variations, and the rationale behind them are not in any way arbitrary but have been performed to allow the final taxonomic framework to be more readily understood and to offer a more accurate representation of the rich data obtained from listeners during the ESM study.

6.5.1 CFF Novel Functions

A key feature of the ESM study's findings and the resultant taxonomy is the identification of three novel functions. The three novel functions identified in the ESM study had no supporting evidence in the ATFF framework, although there is research from beyond the functions literature that resonate strongly with the novel functions (particularly *Earworm Fulfilment* functions). This was an unexpected result, particularly considering mean paper references for a single function in the ATFF was 18 datasets ($M = 17.8$, $SD = 13.8$), although a small number of

functions (i.e. *Aestheticisation*, *Surveillance*, *Physical Discomfort*) did have very limited references in the literature. The ESM study analysis identified *Earworm Fulfilment* in the cognitive domain as a novel function never before identified in the functions research, although a growing body of literature in music psychology has explored earworms in the last half-decade (e.g. Hyman *et al.*, 2015; Williams, 2015). Further to this, the notion of *Habitual Listening* as a function became readily apparent in the inductive qualitative analysis of the ESM study data. Whilst there are possible arguments concerning whether this can be a function, it does pass Merriam's criteria, and in this writer's opinion, *Habitual Listening* should be considered functional.

The final novel function identified from the ESM data and included in the final taxonomy is the *Mimesis & Matching* function. This function occurred at a surprisingly high frequency for a previously unidentified function. The function occurred in 20 separate ESFs, appearing in 3.49% of ESFs, and accounting for 1.92% of all functions reported (1042 total functions reported). The function concerns a blending of external stimuli and internal 'feelings' and an attempt to match or mirror the internal and external.

6.5.2 Absent Functions

Nine functions identified in the ATFF were not identified in the ESM data. These were: *Health*, *Group Identity*, *Express Values (social)*, *Surveillance*, *Symbolic Representation* (both *social* and *identity*), *Identity Creation (identity)*, *Therapy*, and *Situational Relevance*. Before considering whether these functions should be included within the final taxonomic framework, the absence of these functions within the ESM data should be directly addressed. Several possible explanations exist for the lack of these functions.

Rarity

Firstly, we must consider the possibility that some functions occur with infrequency. It is feasible that many functions that listeners are capable of employing are only done so relatively rarely. Evidence for this position can be seen in the three ESFs containing identity functions: *Promote Autonomy & Agency* (two ESFs) and *Personal Development & Understanding* (one ESF). Although rare, many functions with a low incidence of employment litter the ESM data. When compared to the frequent and repetitious employment of other functions (such as *Relaxation & Stress Relief* and *Entertainment & Hedonic Motive*) it is suggested that some functions are simply employed infrequently.

It is possible that some functions present in the ATFF are absent in the ESM data as they are merely too rare to capture in such a longitudinally limited study. It is feasible that with a longer longitudinal study or a study with a larger cohort that these functions would begin to manifest within the data if the hypothesised rarity is the explanation for their absence.

Face Validity

Secondly, there may be issues with experimental design that does not allow evidence of certain functions to be captured. It is possible that a limited, short-term ESM study is not an appropriate tool with which to capture evidence of the functions found to be absent in the data. There is the distinct possibility that experience sampling methodology simply cannot capture certain functions. However, the inclusion of certain functions in social and identity domains in the extant ESM data may contradict this notion. As functions such as *Approval*, *Control & Conformity*, and *Personal Development & Understanding* were identified (albeit with a low frequency), the possibility that many functions within the same domain were not identified due to issues with validity is less likely.

Obfuscated Functions

Thirdly, the functions absent in the ESM may not be possible to identify in a short-term ESM study, as they may only become obvious over a longer period of time or are unknown to participants when reporting. These issues potentially obfuscate the evidence of these functions. It is very possible that participants may not be aware of all the functions they elect to engage with. As such, ESMs may be a tool that simply cannot capture these instances when they occur, as they are not known to participants themselves. It is also feasible that other functions are so prominent in simultaneous instances, the application and effects of other, less-prominent functions are hidden to listeners.

In the feedback portion of a conference presentation of preliminary results of this ESM study (Maloney, 2018), Alexandra Lamont posited that certain aspects of functional listening may not be observed over short longitudinal studies, and rather require significant time commitment and listener insight for them to become clear. Lamont particularly cited those functions concerning identity construction and maintenance in this regard. It is certainly true that extant theory (see DeNora, 2000; Lamont and Webb, 2010) suggests that identity creation and maintenance through music-facilitated goal attainment is a long, reflexive and complex process,

and may not be obvious in the data due to the extended period over which these processes occur. Furthermore, identity creation functions may be particularly prevalent in younger listeners (North, Hargreaves and O'Neill, 2000, p. 269), and the ESM study was limited to participants aged 18 or over.

Non-Existent Functions

Finally, there is the distinct possibility that these functions do not exist as they are expressed in the ATFF. The existence of these categorisations may be a consequence of incorrect thematic coding in the ATFF methodology, or possibly due to the theoretical nature of much of the research that the ATFF was constructed from. Indeed, the ATFF research and study may have incorrectly theorised about or identified these functions. Furthermore, without access to the raw data of the functions literature and an in-depth study design, it is not possible to know if the purported functions were even confirmed as functions against some definition. Yet, it is also true that certain aspects of the taxonomy have been altered and recategorised and may have inadvertently impacted these functions. However, as this was a strict and simplistic recategorization with few changes made to previous data, this is very unlikely. Quite simply: some previous research may use different definitions of function or be incorrect.

Summarising Absent Functions

Suggesting that all functions from the ATFF that were not identified in the ESM study do not exist would be overly pessimistic and would necessitate a significant denial of much extant research. Instead, a more measured position will be taken here. It is likely that the nine absent functions have differing reasons for their non-appearance.

As such, based on their qualitative description in the ATFF analysis, and an understanding of the limited instances of rarer functions in the ESM data, it is suggested that *Surveillance*, *Therapy*, and *Situational Relevance* may be absent due to rarity and should not be excluded. The absence of social and identity domain functions with a quite substantial body of qualitative data in the ATFF is likely a confluence of both face validity issues and obfuscated functionality (*Group Identity*, *Express Values*, *Symbolic Representation* (both social and identity), *Identity Creation*) and again should not be excluded. Finally, it is proposed that the *Health* function may not exist (non-existent function). Rather, *Health* functions represent a broad category of functions, and the specificity of both the ATFF and ESM data has removed the need for the broader categorisation.

6.5.3 Removal of Functions

Only one function has been removed from the final taxonomy that was present in the ATFF. No evidence of the proposed *Health* function was identified in the ESM study, and the literature supporting the function in the ATFF qualitative descriptors is vague and very limited. I would propose the supposed function was not extant in the data due to greater specificity of meaning in other functions; in essence, *Health* has been split into several different facets. Referring back to the six literature attributive references from the functions literature that suggested the function initially (in the ATFF taxonomy), it is possible to recategorise these references into several more appropriate functions. ‘Music Therapy’ uses (two references) would be placed under the *Therapy* function, ‘Enhanced Well-being’ uses (three references) would be placed under the *Promote Autonomy & Agency* function, and the ‘Healing’ use (one reference) would be placed under the *Solace* function (although it should be noted the original source paper evidence is limited at best).

As such, the removal of *Health* from the framework is appropriate and necessary to enforce a consistent and robust approach to functionality. It also points to the reflexivity and iterative nature of the CFF.

6.5.4 Sub-Functions

The fine detail gathered in the ESM study provided the initial data that would later be identified as sub-function. During the combination process, the slight discrepancy between certain similar functions was examined from a perspective akin to that of latent coding (although no coding occurred). As suggested by Braun and Clarke (no date) previously, a lens that “concepts and assumptions underpinning the data” allowed a view of the data to evolve that made plain the distinction between sub-functions and their parent function. Whilst clearly heavily connected, sub-functions typically display more specificity in terms of their goals and seem to be a certain approach to a certain functional behaviour. Given this, it is also highly feasible that further sub-functions exist, showing very specific approaches to functionality. Indeed, it may be that sub-functions were even present in the bibliometric data, but owing to limited sources, these were sorted and compartmentalised under broader functions. Although the concept of sub-functions is a novel one, it is in actuality, fairly unremarkable. It merely suggests that certain functions can be deployed in specific ways.

A number of functions displayed specific foci within their descriptions. Whilst certain functions can be considered to be quite broad in terms of their application, there is data in the ESM study that suggests that certain functions are employed frequently in a very particular manner. As such, several functions now possess sub-functions that are strongly related to the overall thrust of the function but display a very specific goal orientation. This is typified in *Company/Music as Proxy* function and the *Silence Avoidance* sub-function. Whilst it is possible for listeners to approach the concept of music representing a surrogate for human interaction or creating some form of ‘company’, the *Silence Avoidance* sub-function performs the same function but without the need for the felt ‘presence’ of music, rather it is merely to avoid the silence within the space. Therefore, we can conceptualise this function as a very specific and perhaps less complex version of the parent function.

Background functions also now possess a sub-function (*Create & Maintain Atmosphere*), and the *Musicking* function has been reapportioned into a series of sub-functions that more appropriately express the overall nature of *Musicking*-type functions. All proposed sub-functions exist within the meta-domain, although it is proposed that this is likely coincidental rather than a product of the nature of meta-domain functions. It is possible many further sub-functions exist, and the reflexive design of the framework allows for these to be incorporated into the CFF with further investigation and evidence.

6.5.5 Reflexivity

The research presented above is the most current and exhaustive taxonomy of the functions of music. Although this research considers the CFF ‘finalised’, it is not to suggest it is not mutable. A key feature in the development of such a framework, built in part from new data, is the iterative design. It is possible, with further studies, that additional functions of music may be identified, or those already present within the framework could be altered to more accurately circumscribe music-facilitated goal attainment listening processes.

The development of additional, more specific sub-functions within the framework is a distinct possibility, as is the possibility of even more novel functions added over time. With the constantly developing nature of technologically augmented listening, and the increasing portability and reflexivity with which we, and our devices, respond to situational demands and goals, it is highly likely new functions will develop over time. Some functions included within the framework (such as *Aestheticisation*, *Earworm Fulfilment*, and *Surveillance*) would have

been inconceivable without technologically augmented listening. To suggest that our current listening technologies are in some way ‘finished’ or will not evolve further would be folly, and our listening will likely evolve in response to newer engagement mechanisms.

Thus, the possibility of further iterations of the CFF is a key feature of the framework (and the overall methodology employed within this thesis). The future of our listening is uncertain, and such a framework and methodologies allows for this uncertainty.

6.6 Reciprocal Feedback Model 5th Iteration

At this point, it is prudent to revisit the various amendments made to the Reciprocal Feedback Model and adjust two aspects of it given the findings of this and the previous chapter. Previous iterations have seen the model include the varying level of functionality drawn from Merriam and Juslin. It has also seen the model refocused to emphasise the role of goal-orientation in listening, and crucially included reference to the first taxonomy constructed from the bibliometric study.

However, a final iteration of this model should represent the knowledge uncovered in the ESM study and in the combining process (see Figure 3.5). As such, the newly proposed ‘final’ taxonomy of functions has been included (the CFF) in place of the ATFF taxonomy, expanding the possible reach of the model. However, as suggested above, there is a degree of reflexivity in this new taxonomy and it should not be considered expressly ‘finished’. As such, the inclusion of this taxonomy in the Reciprocal Feedback Model represents the most exhaustive list of functions now available and encodes the idea of future research and expansion into the model itself.

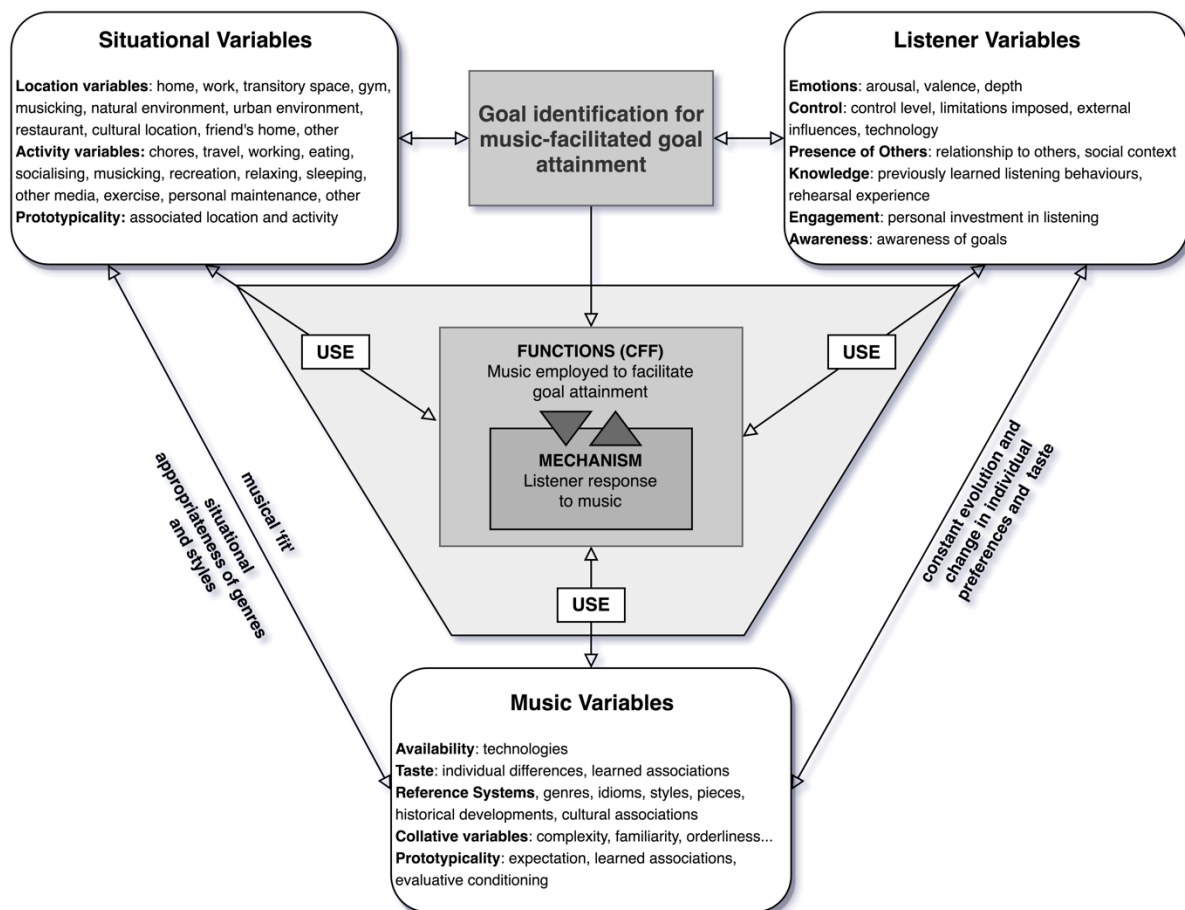


Figure 35 5th iteration of the Reciprocal Feedback Model including the CFF and prototypicality

Further to this, the concept of prototypicality has been included. This concept is one of the key findings of this thesis and offers a possible way to view our functional listening through a more nuanced and interconnected lens. Whilst prototypicality is not a new concept, it has not been evidenced through any statistical measures before. Such measures have shed light on the possible strong associations between specific locations and activities, and may give us access to a more holistic picture of the situational variables that operated as part of the contextual triad. Given that no additional research will be conducted in this thesis, this iteration of the Reciprocal Feedback Model shall be considered the final model that this research positions itself within.

6.7 Consensus Functions Framework: A Summary

The chapter has tested the robustness of the proposed ATFF taxonomy in real-world scenarios through experience sampling methodology (Objective 5). The findings of both the ATFF and

ESM study were analysed and combined findings and a refined final taxonomic framework of goal-orientated listening was presented in the form of the CFF (Objective 6). The investigatory processes have revealed many salient findings concerning the nature of music-facilitated goal attainment listening and the functions of music. Firstly, the resulting Consensus Functions Framework describes the most exhaustive approach to the functions of music currently available. 53 unique functions have been identified throughout both studies, and the CFF offers a final parity-confirmed consensus from all the extant research. A series of definitions that delineated the normal action of each function were created from the rich qualitative data that these studies also provided. As such, this thesis has confirmed the validity and parity of the proposed taxonomy of the functions of music with ecologically valid data (Aim 3).

Secondly, the study has identified and described the three novel functions found within the ESM data. Employing Merriam's definitions, the three identified functions fit the working definition of function as they "concern the reasons for (music's) employment" (1964, p. 210). It is highly probable there are further, unidentified functions lurking in everyday listening episodes, but the analysis here was unable to identify those due to a lack of data. Additional studies would be required to ensure all functions can be identified in real-world contexts. However, the identification of these three new functions is certainly heartening, and a sign that researchers working in the field of the functions of music should not consider the state of our listening stable or finished. Furthermore, it also suggests that functionality may even expand as our available listening technologies develop further.

Thirdly, several functions found in the functional literature were not identified within the ESM study. This led to a theoretical discussion that proposed the reason for such missing functions. The research suggested several reasons for the absence of certain functions, and pointed to issues with study design, and with the nature of functions themselves as key issues in the methodology. However, it is also important to reaffirm that the absence in functions could also be caused by the increased specificity offered by the various studies. The accurate apportionment of functions within the frameworks is likely reducing redundancy, thus categories in previous iterations are no longer required.

Fourthly, a final iteration of the Reciprocal Feedback Model has been produced. Whilst not highlighting any immediately noticeable differences or stark departures from previous models, it does represent a further refinement of the concepts held within the model. The consensus

function framework was placed at the centre of the model, replacing the previous ATFF taxonomy created in the bibliometric study. This allows for much greater specificity and data to provide support for the model. Furthermore, the concept of prototypicality was tested and found to yield significant results in the previous chapter. This has been included in this final iteration of the model, expressing the strong connections and resonances between some locations and activities in a direct and clear manner. The model expresses the interactions between situation, music and the listener, and incorporates a robust and extensive taxonomy of the functions of music (Aim 4, Objective 7).

The research questions that began with developing an understanding of goal-orientated listening and expanded through both theoretical analysis and real-world study have now been addressed. A vivid and in-depth picture of music-facilitated goal attainment listening has been constructed, and a final framework has been developed that allows the identification and description of utilitarian listening. The primary research activities of this thesis have now been completed.

The final chapter will offer a summary of the work by reviewing the key findings of the thesis and will consolidate the novel contributions the work has made to the field of research. The chapter will also offer suggestions for further research and areas of investigation, and closes by offering some concluding thoughts on the future of music-facilitated goal attainment listening and the functions of music.

7.1 Conclusions

Well, my friends, the time has come
Raise the roof and have some fun
Throw away the work to be done
Let the music play on...

- *Lionel Richie "All Night Long" (1983)*

The primary focus of this thesis can be concisely summarised as questioning how listeners use music in everyday life to aid with achieving contextually-rooted goals, and how such processes should best be conceptualised. By approaching the issue from an interdisciplinary perspective, 53 distinct functions of music were identified. These functions span several domains of action, influencing cognition, physiology, emotions, identity, and social interaction. Furthermore, research into the role of context in listening and the associations between functions and situation produced a range of preliminary findings. Additionally, the associated processes in music-facilitated goal attainment or utilitarian listening have been conceptualised by augmenting the Reciprocal Feedback Model. This has led to the presentation of a series of novel contributions to the field of functions research, in addition to producing evidence that supports the assertions of other researchers.

7.2 Contributions, Limitations & Implications

The thesis offers several key contributions. The work is necessarily exploratory at points, but provides replicable studies and useful data, bringing with it the intrinsic value of that data, but also the value of an alternative, interdisciplinary investigation of music-facilitated goal attainment rather than one grounded in a particular regulatory perspective. A summary of four key contributions is presented here with a view to their impact on the field of research, their limitations in their current form, and the implications of the findings in more general terms.

7.2.1 A Taxonomy of Functions of Music

The key finding of this thesis is the Consensus Function Framework (CFF) and the 53 functions of music contained within it. The CFF is the most exhaustive examination of function currently available. Through a mixed-methods approach (bibliometry and ESM), it broadens, expands, and offers a greater level of granularity to the compartmentalisation of functions than any prior work. By increasing the quantity and specificity of functions (such as constructing a delineation between *Music as Proxy* and *Silence Avoidance*), the limitations of other studies

that resulted in broad, vague descriptions are overcome. Yet, this research demonstrates that the functional landscape is not fully mapped, and there are likely two distinct reasons for this. Firstly, three novel functions were identified over the course of the ESM study (*Earworm Fulfilment*, *Habitual Listening*, and *Mimesis & Matching*), suggesting there may be other rare functions of which no evidence has yet been captured. Secondly, ESM studies may not be equipped to fully capture all aspects of functionality within the real world. Functions, such as those concerned with identity construction and maintenance, operate longitudinally, rather than on a momentary, kairotic basis. We require additional methods of investigation to overcome these limitations.

As concerns the potential impacts of the research; a multidisciplinary consensus taxonomy offers a reference point from which to compare research, and could be conceivably used as the basis from which to build a test for parity across disciplinary lines. The resultant taxonomy and novel functions present a useful and timely contribution to the study of the functions of music, and operates to re-centre the somewhat atomised or disparate body of functions research. Yet, beyond the academic applications of a consensus framework – standardising an approach to functions research with particular definitions and existing functions now established – it is expected that the framework could have implications for composers. Although composing for a function or purpose rather than artistic merit may be a more rarefied approach, it could represent a relatively untapped source of inspiration for composers: composing for a utilitarian purpose. In uncovering the functions or utility of music, this research may present new drivers or stimulus for musical composition. This research may provide an opening where context can begin to flourish as an essential aspect of music programming.

7.2.2 Qualitative Descriptors and Definitions

The two studies in this thesis contain a wealth of qualitative data. The first study, a thematic analysis of the current state of research, draws together the various explorations and discussions in the literature around each function, explaining their main features and effects as understood by researchers. The second study, a thematic analysis of newly gathered ESM data, follows the same methodology, explaining the main features and effects of functions identified in ecologically valid conditions, but doing so using the perceptions and reports of real-world listeners. The two blocks of qualitative description show a strong degree of parity with one another supporting the decision to construct a cross-disciplinary pseudo-consensus.

In addition to this, a series of definitions were constructed that express the nature of each function, its effects or experiential qualities, to further expand the utility of the final CFF taxonomy. These definitions are intended to provide a descriptive explanation of each function, but may also be used as a tool for function identification by other researchers. It is hoped these definitions with their companion qualitative descriptions provide a series of guiding data for other functions research. However, whilst the descriptive blocks provided in the studies may offer an insight into the function, it cannot account for potential idiosyncratic responses from some listeners. Rather, both the descriptive blocks and definitions can only represent a prototypical function employment, rather than providing a description that is capable of capturing every nuance of a functional listening episode.

7.2.3 The Contextual Triad

One of the most important contributions of this thesis is the explicit exploration of contextual variables and the establishing of their connection to music-facilitated goal attainment. Two situational variables were identified that are particularly pertinent to goal-orientated listening: location and activity. Through contingency table analysis, it was possible to identify which functions are significantly associated with a particular location, and with a particular activity. Furthermore, it was also possible to triangulate which prototypical situations (combinations of activities and locations) share significantly associated functions. However, the methodology used to generate such findings holds the potential to identify false positives from variables with severely limited data points. To further these findings, to produce a structure of prototypical situations and their associated functions, and to eliminate such false positives, a considerably larger dataset would be required. As such, the findings of the contingency table analyses presented in this thesis are not likely to be generalisable to larger populations. Yet, the findings should be considered broadly indicative.

Most importantly, the thesis demonstrates a methodological approach to the problem of situational variables in goal-orientated listening. Such analysis has not been attempted in this manner in the functions literature. I would propose that by identifying location, activity and the function of music within such a situation, the methodology may have wide-reaching implications for mobile music streaming services. Innumerable attempts have been made to construct contextual music recommendation systems. However, these different approaches have yet to yield a robust, personalised, and user-friendly approach to recommendation. Lamere posits that contextual music recommendation systems will one day achieve an

unprecedented level of autonomy and reflexivity, to the degree that we would be presented with a ‘Zero-Button Music Player’ (Lamere, 2014); a player so well designed that no interaction would be required. Even a cursory review of the academic literature shows the difficulties with such a proposition, with so many differing variables explored in myriad experiments. Yet, this methodology may allow for correlations between contexts, function and individual music tastes, and may bring us one step closer to the tantalising possibility of the zero-button music player.

7.2.4 Augmentations to the Reciprocal Feedback Model

The Reciprocal Feedback Model original expressed the interaction between audience and live musician, before the model was further refined by its original authors to include non-live scenarios. However, the model itself, whilst approximately fit for the exploratory role for which it was original conceived, lacked a significant quantity of additional information that accounted for a much wider and generally accepted body of theory. Firstly, the concept of functionality was hinted at within the model rather than expressly stated as such (referring to a rather opaque ‘response’ component that lacked meaning). Furthermore, it did not place the notion of goal orientation as a central component in the model, rather placing the component as a smaller aspect of a broader model: as evidenced by this thesis, music-facilitated goal attainment is the central pillar upon which hangs our listening behaviour. Finally, the model also left the three components of the contextual triad (listener, situation and music) lacking some essential detail. Throughout this thesis the Reciprocal Feedback Model has been continually amended and augmented through various iterations to provide a model that expresses the intricacies of music-facilitated goal attainment listening.

Going forward, this model provides a stronger set of guidelines as to the processes and variables involved in functional listening. However, in a model such as this it is not possible to attribute proportions of effects or any causal relationship between specific components. This work would require quite a considerable effort to construct a statistical model that explains the effects found in goal-orientated listening. As such, the latest iteration of the Reciprocal Feedback Model can only offer a set of guiding principles and areas of exploration for researchers, and does not accurately model specific outcomes for listeners based on specific arrangement of contextual features.

7.3 Recommendations for Further Research

Throughout this research, questions have arisen that were not satisfactorily answered owing to a lack of extant data or theory. These remaining questions, in combination with some of the key findings of this thesis, suggest a series of recommendations for further study.

Firstly, we lack considerable information about listener perceptions of music-facilitated goal attainment processes and utilitarian listening. However, the importance of individual variables within the wider contextual triad need serious consideration. It is highly probable that the contextual triad, as it presented in the **Reciprocal Feedback Model**, lacks detail and may be missing many additional components or variables that can impact listening episodes. Indeed, there are many functions already listed within the final iteration of the model that are not fully understood and described in any research. For example, only in recent years have the potential impacts of weather even been considered as something that might impact listening. The scant literature available reveals some associations between weather and music choices (as in Krause and North, 2017a, for example), but further investigations are required to properly define and circumscribe the function. What of the role of others in a listening context? What of the relationship they have to the listener? How does the degree of music liking influence the functionality music can have for a listener? How can previous experience impact the engagement? Many questions are raised by the interplay of situation, listener and music, and much of that interaction remains unmapped and unknown.

Secondly, there is the possibility that there may be some biases in play during goal-orientated listening. Can awareness of one's goals or the processes involved in goal-orientated listening influence the outcome for listeners? The work of van Goethem certainly suggests there may be a fruitful seam of exploration here, suggesting that our awareness may drive efficacy. Indeed, this data was gathered during the **ESM** study, and may provide an interesting future direction for research, especially given that basic data collection has already been performed. However, without a fully realised taxonomy of functions (such as those now finally present in the **CFF**) these explorations would be premature. Now, with a broader and more detailed picture of the functions of music at our disposal, we may be able to explore the possible resonances or interplay between goal-orientation, awareness and efficacy.

The third point that arises from the thesis relates to the three novel functions of music identified. These newly identified functions are underpinned by existing theory from music

psychology and music in everyday life upon so as to further elucidate the individual functions (particularly *Habitual Listening* and *Earworm Fulfilment*). However, the final *Mimesis & Matching* function has significantly less theory upon which to draw and has not been explored before. As such, it represents one of the most intriguing avenues of future exploration available. Recent studies into guided imagery (e.g. Ballan & Abraham, 2016) may shed some light on the processes and mechanisms in effect in these functional instances, or may be more related to direct musical components (something that was expressly not investigated in this thesis). There may be other, as yet unknown, explanations or features of this function that have so far eluded us with a limited amount of instances appearing in the data.

Finally, it is imperative that further research into the functions of music strictly observes Merriam's original definitions of the term. The issues encountered during the literature search and sorting procedures of Study 1 serve as an example of the problems created by disparate approaches to the functions of music. A call to action concerning definitions is required for researchers to ensure parity and transferability of functions identified in studies; or at the very least, alternative definitions of the functions of music should be included as a matter of best practice.

7.4 Concluding Thoughts

This thesis has quite purposefully sidestepped certain aspects of listening. Phenomenological subjectivities and the physiological pathways along which musical stimuli pass within our bodies and brains were far beyond the scope of such research. The same is true of the 'musical' aspects of the music listening experience; no research here has attempted to parse the possible consequences or meanings of certain musical components. Yet, these aspects are not the most notable absence. Rather, the role of music within society is the facet of the experience whose presence was inferred rather than directly explored within many discussions within this thesis. Indeed, it is arguable that the positioning of music within society is an area of investigation that would supplement this research.

It is perhaps possible to view music's place in contemporary Western society as rather fragmented. Music as it appears on MTV or Radio 1 is a rather different beast to music as it exists on the shelves of a music fan, or on the stage of a local music venue, or even on the page of a child learning their first notes of the piano. These experiences vary in meaning, intensity, and impact for those engaging in the experience. However, whilst these instances (we might

rightly refer to them as ‘uses’ of music) are entirely grounded within the structures of a given society and must possess some form of ‘value’, this thesis has not explored what that value might be.

Herein lies the difficulty with functions research. Merriam’s work on the functions of music suggests that they are defined by the broader purpose that they serve (1964, p. 210), yet functions, for the most part, are defined by the *individual* employing the music rather than the *group*. Functions, as presented in this thesis, could be argued to be entirely self-interested, rather than socially-accommodating, as they are typically underpinned by the context in which the individual listens and defines their goal. However, listening rarely occurs in a vacuum; the impacts of listening are felt by others, even if the music is not heard. As such, listening operates as a socially relational activity. Or perhaps that is what it *was*.

Our technologically augmented listening practices have disrupted and atomised the social nature of much of everyday life. That is not to suggest that before the Walkman all public transport was filled with amiable conversation, but it may have reduced the happenstance of accidental meetings and spontaneous conversations. We rarely stop to question headphones in the modern era. The moral panic wrought by the Walkman and headphone listening seems overblown and a tad absurd from the vantage point of the twenty-first century (cf. Moebius and Michel-Annen, 1994, pp. 570–576, Lebrecht, 2001). Yet, what have we lost with the move to personalised listening? Are headphones actually maladaptive? Do headphones block out the world too much?

Research is only now beginning to comprehend how social listening and social musicking can boast numerous beneficial effects such as reducing depression (Robert *et al.*, 1994; Miranda and Claes, 2009; Short and Dingle, 2015), increased pain threshold (in Garcia and Hand (2015), for example), improved social cohesion (Brown and Volgsten, 2006; Boer, 2009; Bennett, 2015), and many more. Yet, it is shown in this thesis that individuals can listen to improve their abilities, moods, thought processes, and even sleep. How, then, might we begin to balance the needs of the individual and the needs of society with respect to music-facilitated goal attainment? Could even more social functionality be brought into everyday life?

Particularly, the final functions presented in Merriam’s original study concerning the cohesion of society at large should be considered and re-evaluated. In essence, how might the social be re-established in functional listening?

What is certainly clear is that, regardless of the positioning of music within society and the apparent swing to individualism in music listening, music is a highly reflexive and mutable resource. Music is not merely 'art' or a 'commodity' to be sold or traded. Music is not simply a symbol for individuals to align themselves with or against. Music is not only a tool to increase one's running pace or distract from a particularly arduous journey. Music, despite Blacking's beautiful description, is not only humanly organised sound. In reality, music can be all things to all people. Simply stated:

We do not merely listen; we use.

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Appendix A Features comparison of popular streaming services (contextual features are italicised)²⁵

	Spotify 8.4.3	Amazon Music 6.5.0	Deezer 6.18.0	Apple Music (iTunes 12.6.0.100)	Google Music Play 3.26.1007	Tidal 2.1.2.177
Creators	Promoted: primarily staff designed, some from power curators. Additional: All staff and user playlists can be identified from search and profiles.	Promoted: only staff designed. Additional: only staff	Promoted: primarily staff designed, some from power curators. Additional: All staff and user playlists can be identified from search and profiles.	Promoted: only staff designed. Additional: only staff and limited power curators can be identified from search and profiles.	Promoted: primarily staff designed, some from power curators. Additional: All staff and user playlists can be identified from search.	Promoted: primarily staff designed, some from power curators.
Non-Specific & Non-Musical	Charts, New Releases, Decades, Trending, Fresh Finds, Comedy, Video Series	Featured, Hits, Decades & Eras, All Artists A-Z, Top, Recently Added,	Popular, Charts, New Releases, Radio, Podcasts, New & Politics, Sport, Comedy, Society & Culture, Business, Football, Mixes	New Artists, Top Charts, Decades, Hot Songs, new Releases,	New Music, Decades, Top Charts,	Comedy, Retro, History, Media, Charts, Guests, Events, New, Recommended, Exclusive, Featured, Mastered
Genre	Pop, Electronic/Dance, Hip Hop, Indie, Rock, RnB, Classical, Soul, Jazz, Country, Reggae, Gaming, Folk & Americana, Metal, K-Pop, Punk, Blues, Funk, Latino, Kids,	Blues, Children’s Music, Christian & Gospel, Classic Rock. Classical, Country, Dance & Electronica, Easy Listening, Folk, Hard Rock & Metal, Hip-hop & Rap, Indie & Alternative, Jazz, Latin Music, Miscellaneous, Musicals & Cabaret, New Age & Meditation, Pop, R&B & Soul, Reggae, Rock, Soundtracks, World	Hip Hop & Rap, Grime, R’n’B, Pop, Rock, Dance & EDM, Electronic, Indie, Singer & Songwriter, Country, Metal, Jazz, Soul & Funk, Reggae, Blues, Classical, Kids, Soundtracks & Video Games, Latin, Asian, African, Arabic, Brazilian, Indian	Alternative, Blues, Children’s Music, Christian & Gospel, Classical, Country, Dance, Electronic, Hip-Hop/Rap, Jazz, Metal, Pop, R&B/Soul, Reggae, Rock, Singer/Songwriter, Stage & Screen, World	Alternative/Indie, Blues, Children’s Music, Classical & Opera, Country, Dance & Electronic, Folk, Hip Hop/Rap, Instrumental, Jazz, Metal, Pop, R&B/Soul, Reggae, Rock, Singer-Songwriter, Soundtracks & Musicals, Vocal/Easy Listening, World	Pop, Rock, Alternative, Hip Hop/Rap, R&B/Soul, Metal, Country, Folk/Americana, Blues, Jazz, Classical, Electronic, Dance, Kids, Latin, Reggae/Dancehall, World Music, Soundtracks, Gospel/Christian
“Radio/Station” and Filtering	Radio. Predefined starting points. Preference filtering. Listed content. Stations. Preference filtering. Listed content. Starting point (but only based on artist). Dislike skips.	Stations. Preference filtering. No info on content. Starting point (but only based on artist). Dislike skips.	Mixes * Starting point (but only based on artist). Dislike skips. No info on content. Live actual radio (commercial stations).	Radio. Less responsive filtering (no skips). Starting point. No info on content. Beats 1. Live commercial radio stations.	Radio. Preference filtering. Some predesigned. Some from starting point. Dislike skips.	Track & Artist Stations. No preference filtering. No skips. Track and artist starting points. No info on content.
Mood	Mood **	Energetic, Happy & Upbeat, Hard & Heavy, Relaxed & Laid Back	Feelings & Romance	Sad	Angry, Calm, Celebratory, Confident, Dark, Dreamy, Focused, Fun, Funky, Happy, Introspective, Mellow, Miserable, Psyched Up, Romantic, Rowdy, Silly, Sad, Sexy	Love
Situation or Activity	Focus, Workout, Chill, Sleep, Party, Romance, Travel, Dinner	Family Friendly, Fitness, On The Move, Party & Entertaining, Reading, Work & Focus, At Home, Focus, Kids & Family,	Party, Workout, Chill, Moments **	Focus, Motivation, Workout, Chill, Romance, Party, Weekend	Barbecuing, Being Romantic, Boosting Your Energy, Breaking Up, Cooking, Dancing, Daydreaming, Drinking, Driving, Entertaining, Family Time, Hanging Out with Friends, Getting Psyched Up, Getting Ready to Go Out, Pre-Drinks, Partying, Playing Office DJ (SFW), Stargazing, Singing Outloud, Sleeping, Relaxing, Waking Up, Working Out, Work/Study	Relax, Party, Workout, Focus, Dinner, Seasonal

Spotify notes:

* Recommendations based on musical features. Starting point required (band, track, album). Likes and dislikes as filtering.

** Spotify curated playlists (and power curators) including many specific moods and heavily contextual playlists e.g. “Your Favourite Coffeehouse, Epic Roadtrip, Creativity Boost, Happy Pop Hits, Sad Songs”

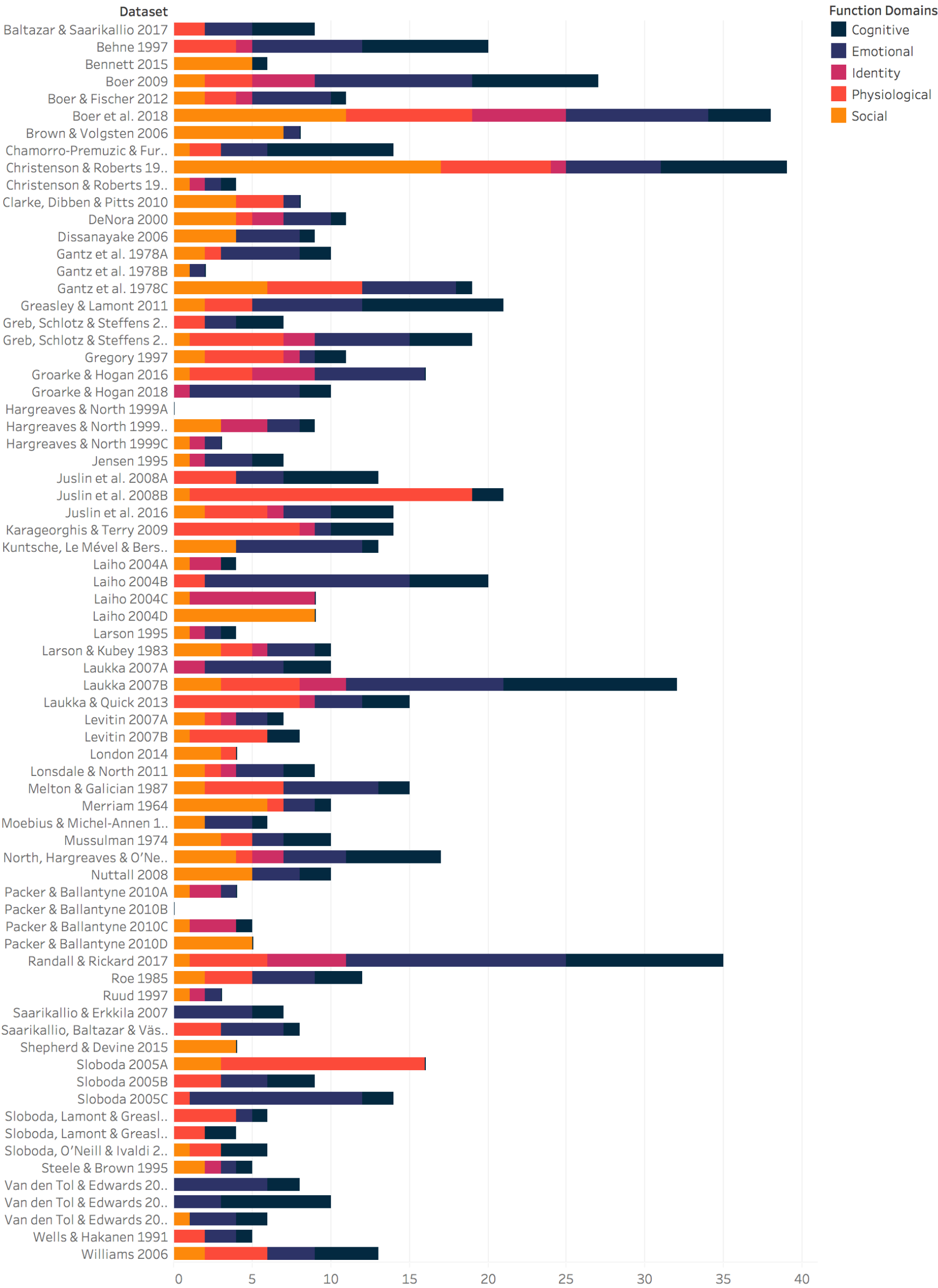
Deezer notes:

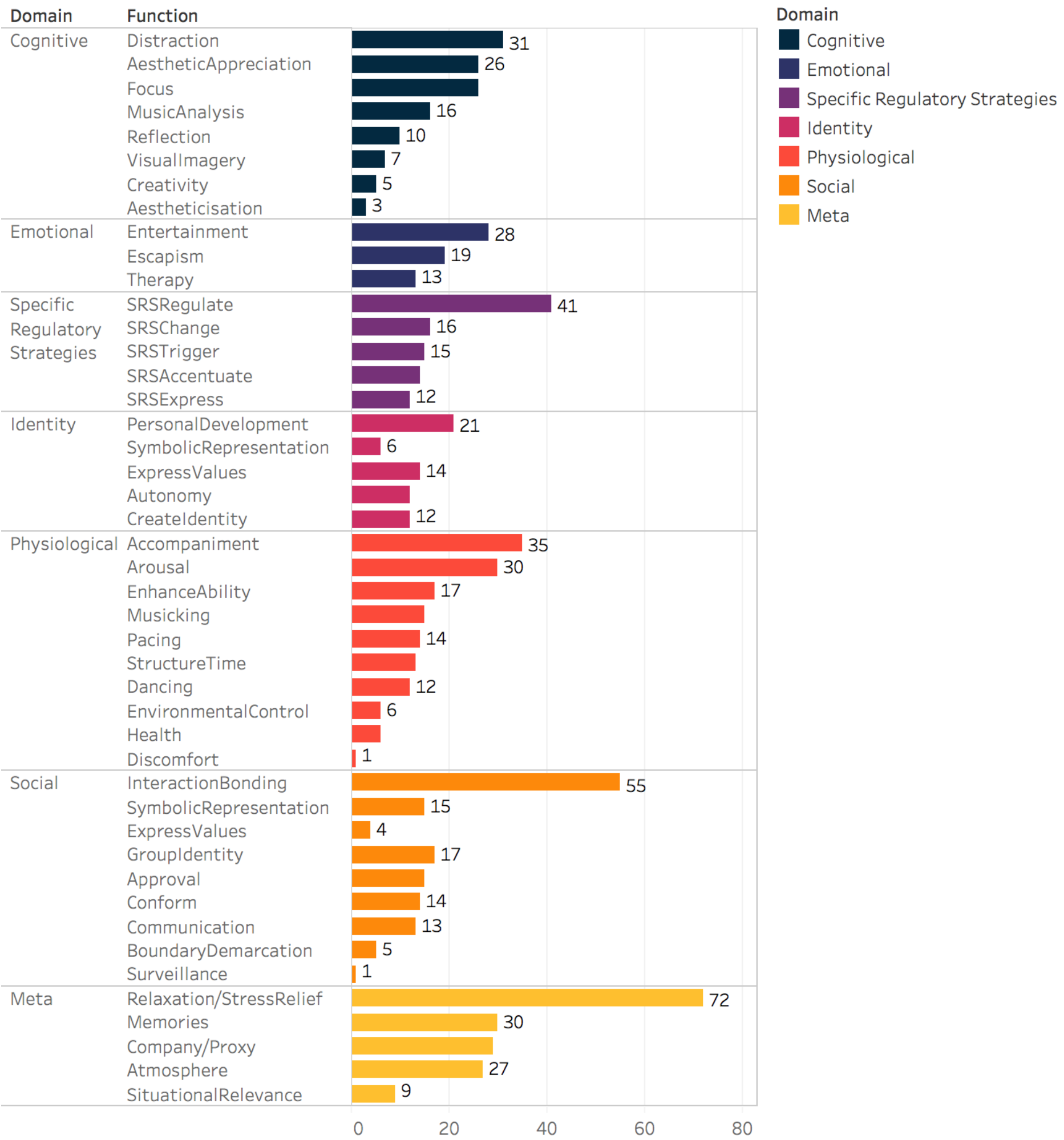
* “Mixes” are Flow playlists based on emotions, contexts, activities, and genres. Like and dislike as filtering. No “starting point” selection.

** Moments are generally “contextual” playlists

²⁵ Accessed 21st February 2017. Deezer (version 6.15.0), Spotify (version 7.6.0), Google Play Music (version 3.17.1007), Amazon Music (version 6.3.1), and Tidal (version 2.1.2.177).

Appendix B Frequency of domains by dataset





Functions of Listening | Sign-up Form

INFORMATION ABOUT THE FUNCTIONS OF LISTENING STUDY

What is this research about and why is it being carried out? The “Functions of Listening” study is an attempt to identify and understand how people listen to music in everyday life, and to explore how *useful* music listening is in helping people achieve situational goals. Athletes might use music to get pumped up before a game, surgeons to help them concentrate during operations, and long distance lorry drivers to give them a distraction. This research looks at what benefits music might have for people in their everyday lives. As it currently stands, there are many different ideas about how music can make us feel, think, or behave, but very few studies have looked at these ideas in everyday life. This study is an attempt to fill in the blanks and see how people use music in their everyday experience.

Who is carrying out the research? My name is Liam Maloney and I am a PhD student at the University of York in the Music Research Centre (MRC). I am collecting this data as part of my thesis.

Why should I take part? What are the benefits and risks? If you complete the study, you will receive a personalised listening profile as a thank you for participating. Based on the data you provide you will receive a breakdown of the music and situations that are most effective for you when achieving certain goals. It will detail the situations where your music listening is most effective, and offer suggestions where music may benefit aspects of your cognition, physiology, emotions/moods, or social interaction. It will also show you how you compare to the study cohort average in various different styles of listening. You will receive this when the analysis is complete via email. The risks to participating in the study are low. Any data you provide containing identifiable data (names etc.) will be immediately redacted. The type of data being collected is relatively low risk and does not ask problematic or overly personal questions. Each listening log entry only takes few minutes and can be done at your convenience.

How do I take part? To participate in the study you must be 18 years of age or older, a UK resident, and have a valid email and mobile telephone number. You must have read and understood the information provided, agree to the conditions of the study, and provide your consent.

How does the study work? The study is a simple process based on “Experience Sampling Methodology” (a common tool for psychological investigations). Once you have signed up to the study and your information has been checked you will receive an SMS message the day prior to the start of the study. You will be sent a link to an online questionnaire to fill in to allow you a trial run at the questionnaire before the study begins the next day. You will receive an SMS message 3 times a day at random intervals containing a link to the online questionnaire. Upon receiving a message, you should fill in the form at your earliest

convenience. The form will ask you about your most recent listening experience. The day after study is completed you will receive a message containing a final quick questionnaire about your experience of the study and some concluding questions. The study will last for 7 days. The messages will be sent at random intervals throughout the day but you will NOT receive a message before 8am or after 10:30pm.

What will happen to my data? And how can I be sure this is safe and secure? This study has been reviewed by the Arts & Humanities Ethics Commission (AHEC) at the University of York. AHEC can be contacted directly at hrc-ethics@york.ac.uk. All the data you provide: your contact details, your demographic information, and your listening logs will be kept on a secure server at the University of York and on an encrypted external hard drive (for backup purposes). Any and all of your contact data will not be shared with any other parties or commercial companies. This data will remain confidential and will be deleted as soon as feasible. University policy requires data to be stored for 10 years. However, once the study and analysis is complete, and you have received your personalised listening profile, your contact details will be deleted. The university will only retain your listening log data and your demographic data. It will not be possible to identify you from this data. Any listening log data that uses names or other identifiers will be censored or redacted. The data you provide (once anonymised) will form a substantial part of my doctoral thesis, and may be used in secondary analysis, additional research, and/or in partnership with commercial entities.

If I take part can I withdraw from the study? And what will happen to my data? You can withdraw from the study at any time. There is no penalty if you decide to leave the study early. The research is entirely voluntary and you can leave the study at any time by sending an email to lm1182@york.ac.uk with the heading “Unsubscribe” and your username. Be aware the unsubscribing process may take up to 48 hours, so you may receive SMS messages before you are fully removed from the system. Please ignore any messages sent in error. If you leave the study, all your contact details will be immediately deleted (phone number, email) but your demographic data (age, occupation etc.) will be kept. This is of value to the final analysis but does not allow you to be identified or contacted. The listening log data you have provided during the study will be kept and used for analysis even if you do not complete the full study. If you do not complete the study you will not receive your personalised listening profile as there will not be enough listening log data to analyse, and your contact details will have been deleted.

I have questions that haven’t been answered here. What should I do? If you have further questions please contact me at lm1182@york.ac.uk with the subject heading “Functions of Listening”.

Please indicate you have read the information sheet and wish to continue

- ☐ *I have NOT read the information provided (1)*
- ☐ *I have read the information provided (2)*

End of Block

Intro & Consent

Display This Question:

If Please indicate you have read the information sheet and wish to continue I have read the information provided Is Selected

FUNCTIONS OF LISTENING STUDY Liam Maloney lm1182@york.ac.uk Ethics Committee hrc-ethics@york.ac.uk Please read the following conditions and tick the appropriate boxes

- ☐ *You have read and fully understand the information provided (previous page) regarding the study (1)*
- ☐ *You have been given the opportunity to contact the researcher with questions or queries (2)*
- ☐ *Click to write Choice 8 (8)*
- ☐ *You understand that you may withdraw from the study at any time and the process by which you unsubscribe/withdraw (3)*
- ☐ *You have read and understand what will happen to your data when the study is complete (detailed in the information provided) (4)*
- ☐ *You understand that you will remain anonymous, and your data will remain confidential (5)*
- ☐ *You are able to provide informed consent (6)*
- ☐ *You agree to participate in the study and provide the appropriate data (7)*

Display This Question:

If FUNCTIONS OF LISTENING STUDY Liam Maloney lm1182@york.ac.uk Ethics Committee hrc-ethics@york.ac.uk Please read the following conditions and tick the appropriate boxes<o:p></o:p>q://QID13/SelectedChoicesCount Is Equal to 8

Having read the above statement, do you give your informed consent to participate in the project?

☐ *I do not agree (1)*

☐ *I agree (2)*

Skip To: Q12 If Q9 = I agree (2)

Page Break

Display This Question:

If FUNCTIONS OF LISTENING STUDY Liam Maloney lm1182@york.ac.uk Ethics Committee hrc-ethics@york.ac.uk Please read the following conditions and tick the appropriate boxes<o:p></o:p>q://QID13/SelectedChoicesCount Is Not Equal to 7

Thanks for taking part but unfortunately without your informed consent and agreement you cannot participate in the survey. Thank you for your time.

Skip To: End of Survey If Q12- (1) Is Displayed

End of Block

Demographic Data

Please create a username (minimum 5 characters)



Please enter your email address We need this to send you your personalised listening profile at the end of the project. This will not be shared with any other parties.



Please enter your mobile telephone number. We need this to run the experiment. We will send you links to the experiment when it is time to take a measurement. This will not be shared with any other parties.



Are you a UK resident? Or are you studying in the UK?

☐ Yes (1)

☐ No (2)

Age Under 18s cannot participate

- ☐ 18 - 24 (1)
 - ☐ 25 - 34 (2)
 - ☐ 35 - 44 (3)
 - ☐ 45 - 54 (4)
 - ☐ 55 - 64 (5)
 - ☐ 65 - 74 (6)
 - ☐ 75 - 84 (7)
 - ☐ 85 or older (8)
 - ☐ I'd rather not say (9)
-

Gender

- ☐ Male (1)
 - ☐ Female (2)
 - ☐ Non-binary/Other (3)
 - ☐ I'd rather not say (4)
-

Occupation Type

- ☐ *Employed full time (1)*
- ☐ *Employed part time (2)*
- ☐ *Unemployed looking for work (3)*
- ☐ *Unemployed not looking for work (4)*
- ☐ *Retired (5)*
- ☐ *Student (6)*
- ☐ *Other (7)*
- ☐ *I'd rather not say (8)*

End of Block

Your Listening Habits

On average, how many times do you listen to music per day?

Frequently (1)



How strongly do you agree with the statement "Music is an important part of my everyday life"?

- ☐ *Strongly agree (1)*
 - ☐ *Agree (2)*
 - ☐ *Somewhat agree (3)*
 - ☐ *Neither agree nor disagree (4)*
 - ☐ *Somewhat disagree (5)*
 - ☐ *Disagree (6)*
 - ☐ *Strongly disagree (7)*
-



Please select the 3 genres you most frequently listen to

☐

Pop (1)

☐

Rock (2)

☐

Dance or Electronic (3)

☐

Hip-hop or R&B (4)

☐

Soul (5)

☐

Jazz (6)

☐

Blues (7)

☐

Classical (8)

☐

Reggae (9)

☐

Country or Folk (10)

☐

Other: (11) _____



Please select the methods you use to listen

- ☐ *Mobile subscription platforms (Spotify, iTunes, Deezer etc.) (1)*
- ☐ *Portable device (MP3 player, iPod, Walkman etc.) (2)*
- ☐ *Youtube/video streaming (3)*
- ☐ *Web-based streams (Soundcloud, Mixcloud) (4)*
- ☐ *CDs (5)*
- ☐ *Records/Vinyl (6)*
- ☐ *Radio (7)*
- ☐ *Other: (8) _____*

Page Break

End of Block

Block 4

Congratulations! You are now signed up to the Functions of Listening study. You will receive an SMS message the day before the study begins with the first of your listening logs ready for you to fill in.

End of Block

Functions of Listening | Log Entry

Before You Start

Username

Have you listened to music since you last used this form?

- ☐ *Yes (1)*
- ☐ *No (2)*
- ☐ *This is my first entry (3)*

End of Block

Your Situation

Describe your recent ACTIVITY e.g. writing, working out, commuting etc.

Describe your recent **LOCATION** e.g. work, travelling, home, friend's apartment etc.

Describe your recent **SITUATIONAL GOAL(S)**. Be as precise and detailed as possible. e.g. concentration, distraction, help exercise etc.

Why are you not listening currently? Is there anything stopping you from listening?

End of Block

Your Situation

Please answer the following based on your **MOST RECENT** or **CURRENT** listening episode situation

Describe your recent **ACTIVITY whilst listening** e.g. writing, working out, commuting etc.

Describe your recent **LOCATION whilst listening** e.g. work, travelling, home, friend's apartment etc.

What were your **SITUATIONAL GOAL(S)** during this activity whilst listening? Be as precise and detailed as possible. e.g. to help concentration, distraction, help you pace exercise, for company, cheer me up etc.

End of Block

Control & Influence

Please answer the following based on your **MOST RECENT** or **CURRENT** listening episode situation

Were you in control of your music listening/choices

Control (1)



Click to write the question text

- ☐ *Mobile subscription platforms (Spotify, iTunes, Deezer etc.) (4)*
- ☐ *Portable device (MP3 player, iPod, Walkman etc.) (12)*
- ☐ *Youtube/video streaming (6)*
- ☐ *Web-based stream (Soundcloud, Mixcloud) (7)*
- ☐ *CD (8)*
- ☐ *Record/Vinyl (9)*
- ☐ *Radio (10)*
- ☐ *Other (11)* _____

Were you with anyone else?

- ☐ *Alone (1)*
- ☐ *With friend (2)*
- ☐ *With partner (3)*
- ☐ *In social group (4)*
- ☐ *With work colleagues (5)*
- ☐ *In public/strangers (6)*
- ☐ *Other (7)* _____
-

Did others influence your listening?

Influence (1)



How do you think they influence your listening?

End of Block

Your Most Recent/Current Listening

Please answer the following based on your MOST RECENT or CURRENT listening episode situation

What is/was the music? If unknown please describe the music. artist and song OR artist and album OR playlist title and short description

How much do you like this music?

Liking (1)



Why did you select this music for your current SITUATIONAL GOAL(S)? Consider how it made you feel, behave, move, act, think etc.

How did this music INFLUENCE your SITUATIONAL GOAL(S)?

Influence (1)



Why do you think this music influenced your situational goal(s)? If NOT, why not?

What aspects of you were influenced by the music?

- ☐ Behaviour (in group or alone) (1)
- ☐ Cognition/Thinking/Processing (2)
- ☐ Emotions/Mood (3)
- ☐ Physiology/Body/Action (4)
- ☐ Psychology/Mental Wellbeing/Attitude (5)
- ☐ Other (explain) (6) _____

☐ None (explain) (7) _____

Did you notice any other effects?

How CONSCIOUSLY AWARE were you of matching your music selection to your situational goals?

Awareness (1)



Overall, how effective was this listening in helping achieve your SITUATIONAL GOAL(S)?

Effectiveness (1)



End of Block

Appendix F Functions of listening study: Evaluation form

Functions of Listening | Final Evaluation

Start of Block: Before You Start

To finalise the study please fill in as much information as possible. This, combined with your log entries, will go into creating your personalised listening profile. You **MUST** complete this final form to receive your profile.

Please take your time. As much info as possible would be hugely helpful.

Username

End of Block: Before You Start

Start of Block: Block 2

Before you are asked about your thoughts and the impressions of the study, please take a moment to answer the following questions about the technical aspects of the experiment.

During the experiment there were reports of some participants not receiving some SMS log requests. If you did not receive 3 messages a day please select which ones you **DID NOT** receive.

Clarification: *please tick the messages you DID NOT receive.*

- ☐ *Mon 1/3 (1)*
- ☐ *Mon 2/3 (2)*
- ☐ *Mon 3/3 (3)*
- ☐ *Tues 1/3 (4)*
- ☐ *Tues 2/3 (5)*
- ☐ *Tues 3/3 (6)*
- ☐ *Wed 1/3 (7)*
- ☐ *Wed 2/3 (8)*
- ☐ *Wed 3/3 (9)*
- ☐ *Thurs 1/3 (10)*
- ☐ *Thurs 2/3 (11)*
- ☐ *Thurs 3/3 (12)*
- ☐ *Fri 1/3 (13)*
- ☐ *Fri 2/3 (14)*
- ☐ *Fri 3/3 (15)*
- ☐ *Sat 1/3 (16)*
- ☐ *Sat 2/3 (17)*
- ☐ *Sat 3/3 (18)*

- ☐ *Sun 1/3 (19)*
- ☐ *Sun 2/3 (21)*
- ☐ *Sun 3/3 (this form) (24)*

Regarding the SMS messages you received, please rate how strongly you agree with each statement.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree				
	0	1	2	3	4	5	6	7	8	9	10
The messages were sent at appropriate times ()											
I received messages too often ()											
The time between messages was appropriate ()											
I found the online form easy to use ()											
I found the questions ambiguous ()											
There were days where I did not receive a message ()											

Did you ever falsify your reports?

i.e. you had not listened to that music or performed that activity

- ☐ *Always (18)*
 - ☐ *Most of the time (19)*
 - ☐ *About half the time (20)*
 - ☐ *Sometimes (21)*
 - ☐ *Never (22)*
-

Did you ever listen with the goal of having something to log?

- ☐ *Always (18)*
- ☐ *Most of the time (19)*
- ☐ *About half the time (20)*
- ☐ *Sometimes (21)*
- ☐ *Never (22)*

End of Block: Block 2

Start of Block: Block 5

Next, some questions about your insights into your own listening habits.

How strongly do you agree with the statement "Music is an important part of my everyday life"?

- ☐ *Strongly agree (4)*
 - ☐ *Agree (5)*
 - ☐ *Somewhat agree (6)*
 - ☐ *Neither agree nor disagree (7)*
 - ☐ *Somewhat disagree (8)*
 - ☐ *Disagree (9)*
 - ☐ *Strongly disagree (10)*
-

How strongly do you agree with the statement: "This study has altered my understanding of my listening"?

- ☐ *Strongly agree (4)*
 - ☐ *Agree (5)*
 - ☐ *Somewhat agree (6)*
 - ☐ *Neither agree nor disagree (7)*
 - ☐ *Somewhat disagree (8)*
 - ☐ *Disagree (9)*
 - ☐ *Strongly disagree (10)*
-



Please explain why you do or do not agree with the previous statement.

How strongly do you agree with the statement: "This study has made me more aware of my goals when listening"?

- ☐ *Strongly agree (4)*
- ☐ *Agree (5)*
- ☐ *Somewhat agree (6)*
- ☐ *Neither agree nor disagree (7)*
- ☐ *Somewhat disagree (8)*
- ☐ *Disagree (9)*
- ☐ *Strongly disagree (10)*



Please explain why you do or do not agree with the previous statement.

How strongly do you agree with the statement: "This study has altered my listening"?

- ☐ *Strongly agree (4)*
- ☐ *Agree (5)*
- ☐ *Somewhat agree (6)*
- ☐ *Neither agree nor disagree (7)*
- ☐ *Somewhat disagree (8)*
- ☐ *Disagree (9)*
- ☐ *Strongly disagree (10)*



Please explain why you do or do not agree with the previous statement.

How strongly do you agree with the statement: "This study has been beneficial for my listening"?

- ☐ *Strongly agree (4)*
- ☐ *Agree (5)*
- ☐ *Somewhat agree (6)*
- ☐ *Neither agree nor disagree (7)*
- ☐ *Somewhat disagree (8)*
- ☐ *Disagree (9)*
- ☐ *Strongly disagree (10)*



Please explain why you do or do not agree with the previous statement.

End of Block: Block 5

Start of Block: Block 4

The following questions explore how you select your music.









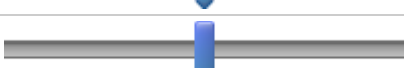


How strongly do you agree with the statement: "The study has made me reconsider how I select music"?

- ☐ *Strongly agree (4)*
- ☐ *Agree (5)*
- ☐ *Somewhat agree (6)*
- ☐ *Neither agree nor disagree (7)*
- ☐ *Somewhat disagree (8)*
- ☐ *Disagree (9)*
- ☐ *Strongly disagree (10)*
-

When selecting music, which of the following would inform your choice?

Please rate all that apply. If you rate 0 you must touch the slider.

Definitely will not	Probably will not	Might or might not	Probably will	Definitely will						
0	1	2	3	4	5	6	7	8	9	10

Taste/Preference ()	
Who I am with ()	
Situation ()	
Mood/Emotions ()	
Availability of music ()	
Familiarity ()	
Activity ()	
Memory/Nostalgia ()	
Format (mp3, vinyl etc) ()	
Situation ()	
Weather ()	

Are there any other factors that influence your choice of music?

How strongly do you agree with the statement: "Music can help me achieve my goals"?

- ☐ *Strongly agree (4)*
- ☐ *Agree (5)*
- ☐ *Somewhat agree (6)*
- ☐ *Neither agree nor disagree (7)*
- ☐ *Somewhat disagree (8)*
- ☐ *Disagree (9)*
- ☐ *Strongly disagree (10)*



If you agree, can you give an example? If not, why not?

Is there anything else you'd like to give feedback on?

It can be regarding the experiment procedure, your experience of the study, anything you feel should be considered when analysing your data, or anything you feel might be relevant to the study.

End of Block: Block 4

Start of Block: Block 3

Do you wish to receive your personalised listening profile once your data has been analysed?

☐ *No (1)*

☐ *Yes (4)*

Display This Question:

If Do you wish to receive your personalised listening profile once your data has been analysed? = Yes



Please re-enter your email address where you will receive your personalised listening profile once the analysis is completed (may take up to 2 months for some participants).

End of Block: Block 3



Arts and Humanities Ethics Committee

STANDARD SUBMISSION FORM

To be used for:

- *Small scale evaluation & audit work*
- *Non-invasive research*
- *Not involving vulnerable groups e.g.*
- *Children*
- *Those with learning disabilities*
- *People with mental impairment due to health or lifestyle*
- *Those who are terminally ill*
- *Recently bereaved*
- *Those unable to consent to or understand the research*
- *Where research concerns sensitive topics / illegal activities*
- *Where deception is involved*
- *Any research requiring a CRB or DBS check*

Following initial evaluation you may be required to submit a Full application to AHEC where ethical issues need more detailed consideration

Applicants are advised to read the AHEC guidance on designing participant information sheets and on designing participant consent forms and the examples of best practice which can be found at:

<https://www.york.ac.uk/hrc/ahec/best-practice>

Completed forms should be sent **electronically** by the Supervisor or Head of Department to the AHEC Administrator Helen Jacobs, at hrc-ethics@york.ac.uk, together with the relevant project information and informed consent forms.

The committee will respond to submissions within a maximum of four weeks, but will endeavour to respond sooner than this.

SUBMISSION FORM

1a. Please provide the following details about the applicant

<u>Name of Applicant:</u>	Liam Maloney
<u>Email address:</u>	Lm1182@york.ac.uk
<u>Telephone:</u>	■■■■■■ ■■■■■■
<u>Staff/Student Status:</u>	PhD Student (FT)
<u>Dept/Centre or Unit:</u>	Music Research Centre

1b. Any other applicants (for collaborative research projects) at York or elsewhere

Name of Applicant:	N/A
email address:	
Telephone:	
Staff/Student Status:	
University Dept/Centre or Unit:	
Head of Department:	
HoD email address:	
Head of Research: (if applicable)	
HoR email address: (if applicable)	

2. If you are a student please provide the following supervisory details for your project:

1 st Supervisor	Dr Jez Wells
email address:	Jez.wells@york.ac.uk
2 nd Supervisor	Dr Catherine Laws
email address:	Catherine.laws@york.ac.uk

3. Please provide the following details about your project:

Title of Project:	Functions of Listening
Date of Submission to AHEC:	28 th August 2017
Project Start Date:	8 th – 16 th October (although preferably earlier if AHEC approve earlier).
Duration:	9 Days
Funded Yes/No:	No
Funding Source:	N/A
External Ethics Board Jurisdictions:	N/A

4. Summary of research proposal

<p><u>Aims and objectives of the research</u></p> <p>Please outline the questions or hypotheses that will be examined in the research.</p> <p>The study will attempt to verify the proposed Aggregate Thematic Functions framework (ATF from here on) I present in my thesis. The model proposes that individuals expressly employ music to augment aspects of their selves; cognition, physiology, social interaction, emotions etc.</p> <p>The study will look at what music is used by participants within specific situations as it pertains to situationally rooted goals. It will also draw into action questions</p>
--

regarding listening methodologies (streaming, radio, vinyl etc.) and look at external influences that may mediate the use of music in some situations.

Methods of data collection

Outline how the data will be collected from or about human subjects (e.g. face to face interviews, online surveys, telephone surveys).

The data will be collected from participants using online questionnaires (Qualtrics through the university system). The questionnaires will be distributed via SMS text messages sent at random intervals throughout the 9 days of the study via the University of York Telephony service.

Recruitment of participants

How many participants will take part in the research? How will they be identified and invited to take part in the study? How will informed consent be obtained?

The ideal participant range is between 25-50. However, more prospective participants will be targeted than are required as sign-up prior to the study start will be necessary and a significant dropout rate is predicted.

Participants will be identified from random sampling approaches in York city centre. Individuals wearing headphones will be given a preliminary information sheet giving a short overview of the project and how to participate (visiting the signup form, administered through Qualtrics).

Informed consent will be obtained through Qualtrics forms. Firstly, prospective participants will be presented with an extensive information sheet detailing the project, who I am, the procedure, data protection procedures, withdrawing from the project etc. (in line with the AHEC information sheet guidelines).

Secondly, participants will be asked if they have read the information sheet and understand the various aspects of the project (procedures, withdrawal, data protection, informed consent etc.) and requested to tick that they understand each of the conditions (as outlined by the AHEC documentation).

Thirdly, participants will be asked if they consent to participation in the project.

Finally, individuals will provide contact (mobile telephone number and email) and demographic data. If participants are not eligible due to age they will also be denied from participating (below 18+ years).

Participant information sheets and consent forms

Please attach (1) the project information sheet to be given to all participants and (2) the informed consent form or a combined project information and informed consent form **(n.b. failure to submit these documents may delay the approval process.)**

- i. If either the project information or informed consent forms have not been attached, please explain why this is the case.

ii. Are the results to be given as feedback or disseminated to your participants (if yes please specify when, in what form, and by what means)
Participants will be offered a personalised overview of their listening profile collected during the project with certain aspects of their listening highlighted. They will also be compared to aspects of the general cohort. The profile will offer an insight into their data, but will not be an exhaustive list. The profile will not contain any identifiable data. It will be presented as a 2 page PDF document.

Anonymity
In most instances the Committee expects that anonymity will be offered to research subjects. Please set out how you intend to ensure anonymity. If anonymity is not being offered please explain why this is the case.
<p>The study will ask participants to define a username, rather than rely on names. The study will require both email and mobile telephone numbers to function, but these will be deleted once the personalised listening profile has been delivered to individual participants.</p> <p>Some basic demographic data is being collected (gender, age bracket, occupation, and whether UK resident or not). This data will not be redacted but will not allow for identification.</p> <p>If names or other identifiable data is collected within the listening logs participants are required to complete this will be redacted before analysis.</p>

Data collection
<p>All personal and sensitive data must be collected and stored in accordance with the Data Protection Act 1998 and the University's research data management (RDM) policy https://www.york.ac.uk/library/info-for/researchers/data/storing/</p> <p>At the moment, the University's research data management policy is applied to research undertaken by postgraduate research students and research staff only. This suggests retaining data for a period of 10 years.</p> <p>Although data produced by taught postgraduates does not therefore need to be retained under the RDM Policy we do recommend that you store the data for a minimum period of 2 years.</p>
i. Please detail type(s) of data you will be collecting (e.g. interviews, questionnaires, recordings).
<p>Questionnaires:</p> <p>1 consent/demographic form</p>

21 (approx.) listening logs 1 end of study questionnaire
<p><i>ii. How will you collect the data and where will it be stored electronically? Please describe what protection there will be in relation to electronic storage?</i></p> <p>Data collection Questionnaires: all questionnaires will be stored within the Qualtrics system during data gathering. Once the study is complete this will be deleted from the Qualtrics system. Contact information: telephone numbers will be stored within Qualtrics, on an encrypted back up hard drive, and within the University of York Telephony system.</p> <p>Data storage Password protected laptop University filestore (via FTP) Encrypted external backup drive</p>
<p><i>iii. Where is the data to be stored in paper form? Please describe how this will be protected.</i></p> <p>There will not be any paper copies made.</p>
<p><i>iv. At what point are you proposing to destroy the data, in relation to the duration of this project? And how?</i></p> <p>The identifying/contact data (email addresses and mobile telephone numbers) will be deleted once the personalised listening profiles have been administered. The remaining data will stay stored electronically for 10 years (from last access request) in accordance with university policy.</p>
<p><i>v. If you are sharing data with others outside your department, what steps are you taking to ensure that it is protected?</i></p> <p>All listening log data and demographic data will not be shared beyond the department. Only myself, my two supervisors, and the department's music psychology lecturer will see the data. Contact telephone numbers will be accessible by the University of York Telephony service staff, but will not contain any identifiable data.</p>
<p><i>vi. If the data is to be exported outside the European Union, what steps are you taking to ensure that it is protected? (Note: you must identify how you will comply with Data Protection Act 1998 requirements.)</i></p>

There are currently no plans to take the research beyond the EU. However, given the UK's exit from the EU I will amend my data protection plan in accordance with new legislation.

Perceived risks or ethical problems

Please outline any anticipated risks or ethical problems that may adversely affect any of the participants, the researchers and or the university, and the steps that will be taken to address them. **(Note: all research involving human participants can have adverse effects.)**

i. Risks to participants (e.g. emotional distress, financial disclosure, physical harm, transfer of personal data, sensitive organisational information...)

All data will be given freely. As noted in the information sheet individuals can reply to the sampling requests when suits them or is most convenient. Random texts will include reminders about not using mobile devices when driving. The experience of the study may sample individuals at times of personal emotional distress, but is not intended to cause distress. Participants may freely ignore sampling requests.

A plan is in place for the deletion of identifiable data.

Participants may withdraw at any time.

A full DMP has been completed and will be amended as appropriate.

ii. Risks to researchers (e.g. personal safety, physical harm, emotional distress, risk of accusation of harm/impropriety, conflict of interest...)

The only potential risks to me as a researcher come from approaching individuals when identifying participants. However, during the selection process there will be others assisting me and will be in a heavily populated area.

All data will be given freely, and the individual contact details will be removed as soon as possible (to remove the possibility of impropriety).

iii. University/institutional risks (e.g. adverse publicity, financial loss, data protection...)

The reputational impact of a study run via SMS is the only issue raised by my supervisor. However, after an email discussion with the chair of AHEC there should be no issues of administering a questionnaire in this way. SMS distribution will occur using the University of York Telephony system and be subject to the institution's data protection policy.

The information stored on the university system will only be sensitive for a short period (until the personalised listening profiles are distributed), at most 2-3 weeks. After this time, the data will not contain any identifiable features.

In the event of a cyber attack the data could not be traced back to individuals.

The use of the University of York logo on the Promo Sheet and the embedded introductory video has been approved by the university marketing department.
<i>iv. Financial conflicts of interest (e.g. perceived or actual with respect to direct payments, research funding, indirect sponsorship, board or organisational memberships, past associations, future potential benefits, other...)</i>
The majority of my study is self funded (with fees paid by the Jack Lyons Scholarship). There are no conflicts of interest from a financial perspective (or otherwise).
v. Please draw the committee's attention to any other specific ethical issues this study raises.
The only concern regards the SMS procedure. However, the University of York Telephony system exists as a non-commercial entity within the university and is subject to all institutional data protection policies. It is the safest and most appropriate choice of platform over commercial blast text distribution services.

5. Ethics checklist

Please confirm that all of the steps indicated below have been taken, or will be taken, with regards to the above named project submitted for ethical approval. If there are any items that you cannot confirm, or are not relevant to your project, please use the space provided below to explain.

Please tick if true, otherwise leave blank:

- ☒ Informed consent will be sought from all research participants where appropriate
- ☒ All data will be treated anonymously and stored in a secure place
- ☒ All relevant issues relating to Data Protection legislation have been considered (see <http://www.york.ac.uk/recordsmanagement/dpa/>) & the Data Protection office contacted (Dr Charles Fonge, Borthwick Institute, charles.fonge@york.ac.uk)
- ☒ All quotes and other material obtained from participants will be anonymised in all reports/publications arising from the study where appropriate
- ☒ All reasonable steps have been taken to minimise risk of physical/psychological harm to project participants.
- ☒ All reasonable steps have been taken to minimise risk of physical/mental harm to researchers
- ☒ Participants have been made aware of and consent to all potential futures uses of the research and data

- ☒ Any relevant issues relating to intellectual property have been considered (see <https://www.york.ac.uk/staff/research/external-funding/ip/policy/>), and, if relevant, the University's Legal Manager, Matthew Just matthew.just@york.ac.uk, has been made aware of the research.
- ☒ There are no known conflicts of interest with respect to finance/funding
- ☐ The research is approved by the Supervisor, Head of Department or Head of Research

If any of the above items have not yet been confirmed, please explain why in the space below.

6. Other comments

Are there any issues that you wish to draw to the Committee's attention (it is your responsibility to draw any ethical issues to AHEC that may be of perceived or actual interest)?

7. Submission Checklist for Applicants

Finally, please **complete the statement section below** and ensure that **the indicated documents** below are sent **electronically** to hrc-ethics@york.ac.uk by the supervisor, Head of Department or Departmental Research Chair, as appropriate.



AHEC Application form



Information and Informed Consent form for participants

8. Statements

Statement by applicant

In submitting this application I hereby confirm that there are **no actual or perceived conflicts of interest** with respect to this application (and associated research) other than those already declared.

Furthermore, I hereby undertake to ensure that the above named research project will meet the commitments in the checklist above. In conducting the project, the research team will be guided by the AHRC's ethical guidelines for research.

Liam Maloney (Name of applicant)

8th August 2017 (Date)

If applicant is a student:

Statement by supervisor

I have read all component elements of this application in detail and discussed them with the applicant, suggesting revision or improvements where appropriate. I am satisfied that all documents to be shared with external partners or participants are of a suitably high standard to represent the thoughtfulness and professionalism of the applicant, the department and the university community well in their relations with external bodies.

..... Name of Supervisor

..... (Date)

If applicant is a member of academic staff:

Statement by Head of Department or Departmental Research Chair:

I have read through the application and the documentation that will be shared with external bodies, where this exists, and am satisfied that documents to be shared with external partners or participants are of a suitably high standard to represent the thoughtfulness and professionalism of the project, the department and the university community well in their relations with external bodies.

..... (Name)

.....(Role)

..... (Date)

Re-submission of AHEC application form

If the application is a re-submission following comments made by AHEC Committee members, the applicant and Supervisor should sign below to confirm that they have read and understood the AHEC recommendations and consider that the attached response deals appropriately with its recommendations.

.....(Applicant)

.....(Supervisor/Head of Department)

..... (Date)

The supervisor, Head of Department or Departmental Research Chair should send the completed form and accompanying documentation to the AHEC administrator at hrc-ethics@york.ac.uk.

Appendix H Ethics approval confirmation



Liam Maloney <lm1182@york.ac.uk>

Ethics paperwork for PhD student Liam Maloney (Music)

AHEC <hrc-ethics@york.ac.uk>
To: Liam Maloney <lm1182@york.ac.uk>
Cc: Jez Wells <jez.wells@york.ac.uk>

1 September 2017 at 16:36

Dear Liam

Functions of Listening

Thank you for your application to the Arts and Humanities Ethics Committee for ethical approval of the above project. I am pleased to let you know that the committee has given its approval. The chair of the committee, Dr Kate Giles, made the following advisory comments:

Liam consulted with me whilst preparing the application and I also consulted our colleagues in Archaeology and TFTV about this mode of research. I found Liam's short statement that this kind of research is well established in psychology and therapeutic research very helpful and it enabled me to find relevant literature and information on the web simply and easily, so perhaps a short one sentence phrase along these lines could be added to the Information Sheet.

I should add that other aspects of this application are very thorough and a model application.

On behalf of AHEC, I wish you well with your research.

Best wishes
Helen

Helen Jacobs
Administrator, Arts and Humanities Ethics Committee
Humanities Research Centre
Berrick Saul Building
University of York
YO10 5DD
www.york.ac.uk/hrc/ahec



Functions Of Listening

INFORMATION ABOUT THE FUNCTIONS OF LISTENING STUDY

What is this research about and why is it being carried out?

The “Functions of Listening” study is an attempt to identify and understand how people listen to music in everyday life, and to explore how *useful* music listening is in helping people achieve situational goals.

Athletes might use music to get pumped up before a game, surgeons to help them concentrate during operations, and long distance lorry drivers to give them a distraction. This research looks at what benefits music might have for people in their everyday lives. As it currently stands, there are many different ideas about how music can make us feel, think, or behave, but very few studies have looked at these ideas in everyday life. This study is an attempt to fill in the blanks and see how people use music in their everyday experience.

Who is carrying out the research?

My name is Liam Maloney and I am a PhD student at the University of York in the Music Research Centre (MRC). I work primarily in the fields of music listening, music psychology, and music recommendation systems. I am collecting this data to provide the primary study for my thesis.

Why should I take part? What are the benefits and risks?

If you agree to participate in the study, fulfil the basic criteria, and complete the study, you will receive a personalised listening profile as a thank you for participating.

Based on the data you provide you will receive a breakdown of the music and situations that are most effective for you when achieving certain goals. It will detail the situations where your music listening is most effective, and offer suggestions where music may benefit aspects of your cognition, physiology, emotions/moods, or social interaction. It will also show you how you compare to the study cohort average in various different styles of listening. You will receive this when the analysis is complete via email.

The risks to participating in the study are low. Any data you provide containing identifiable data (names etc.) will be immediately redacted. The type of data being collected is relatively low risk and does not ask problematic or overly personal questions. Each listening log entry only takes few minutes and can be done at your convenience.

What is the basic criteria to participate in the study?

To participate in the study you must be 18 years of age or older, a UK resident, and have a valid email and mobile telephone number.

How do I take part?

To take part in the study you must fulfil the basic criteria, have read and understood the information provided, agree to the conditions of the study, and provide your consent.

What does the study involve?

The study is a simple process based on “Experience Sampling Methodology” (a common tool for psychological investigations). Once you have signed up to the study and your information has been checked you will receive an SMS message the day prior to the start of the study. You will be sent a link to an online questionnaire to fill in to allow you a trial run at the questionnaire before the study begins the next day.

You will receive an SMS message 3-4 times a day at random intervals containing a link to the online questionnaire. Upon receiving a message, you should fill in the form at your earliest convenience. The form will ask you about your most recent listening experience. If you haven’t listened to music since your last listening entry you will be asked to fill in a separate section. The day after study is completed you will receive a message containing a final quick questionnaire about your experience of the study and some concluding questions.

The study will last for 7 days. Although the messages will be sent at random intervals throughout the day you will not receive a message before 8am or after 10:30pm.

What will happen to my data? And how can I be sure this is safe and secure?

This study has been reviewed by the Arts & Humanities Ethics Commission (AHEC) at the University of York. AHEC can be contacted directly at hrc-ethics@york.ac.uk.

All the data you provide: your contact details, your demographic information, and your listening logs will be kept on a secure server at the University of York and on an encrypted external hard drive (for backup purposes). Any and all of your contact data will not be shared with any other parties or commercial companies. This data will remain confidential and will be deleted as soon as feasible.

University policy requires data to be stored for 10 years. However, once the study and analysis is complete, and you have received your personalised listening profile, your contact details will be deleted. The university will only retain your listening log data and your demographic data. It will not be possible to identify you from this data. Any listening log data that uses names or other identifiers will be censored or redacted. The data you provide (once anonymised) will form a substantial part of my doctoral thesis, and may be used in secondary analysis, additional research, and/or in partnership with commercial entities.

If I take part can I withdraw from the study? And what will happen to my data?

You can withdraw from the study at any time. There is no penalty if you decide to leave

the study early. The research is entirely voluntary, and I am grateful for any and all data you can provide even if it does not last the length of the study. You can leave the study at any time by sending an email to lm1182@york.ac.uk with the heading “Unsubscribe” and your username. Be aware the unsubscribing process may take up to 48 hours, so you may receive SMS messages before you are fully removed from the system. Please ignore any messages sent in error.

If you leave the study, all your contact details will be immediately deleted (phone number, email) but your demographic data (age, occupation etc.) will be kept. This is of value to the final analysis but does not allow you to be identified or contacted. The listening log data you have provided during the study will be kept and used for analysis even if you do not complete the full study.

If you do not complete the study you will not receive your personalised listening profile as there will not be enough listening log data to analyse, and your contact details will have been deleted.

I have questions that haven’t been answered here. What should I do?

If you have further questions please contact me at lm1182@york.ac.uk with the subject heading “Functions of Listening”.



Functions Of Listening

FUNCTIONS OF LISTENING STUDY

Liam Maloney lm1182@york.ac.uk

Ethics Committee hrc-ethics@york.ac.uk

Please read the following conditions and tick the appropriate boxes

- ☐ *You have read and fully understand the information provided (previous page) regarding the study*
- ☐ *You have been given the opportunity to contact the researcher with questions or queries*
- ☐ *You understand the procedure (SMS messages etc.) and the study process*
- ☐ *You understand that you may withdraw from the study at any time and the process by which you unsubscribe/withdraw*
- ☐ *You have read and understand what will happen to your data when the study is complete (detailed in the information provided)*
- ☐ *You understand that you will remain anonymous, and your data will remain confidential*
- ☐ *You are able to provide informed consent*
- ☐ *You agree to participate in the study and provide the appropriate data*

Having read the above statement, do you give your informed consent to participate in the project?

I do not agree

☐

I agree

☐

Appendix K Functions of listening: Approach script

1. Researcher: “Hello. Can I ask what you’re listening to?”

Subject Response. Continue script. If negative skip to 6.

2. Researcher: “The reason I ask is because I’m currently recruiting for a study that explores people’s listening habits. Have you got a short 30 seconds for me to try to convince you to participate?”

Subject Response. Continue script. If negative skip to 6.

3. Researcher: “It’s a really simple study. All I’m asking you to do is sign up [present flyer] with some really basic information. The study begins in X weeks time and lasts a week. You’ll just get a text message a few times a day with a link to an online form. You fill it out with what you’ve been listening to and a few questions about why that piece of music. And that’s it. It won’t cost you any money at all.

The study isn’t paid, but what I’ve decided to do to say thank you to everyone who finishes the study is create a personalised listening profile about how you listen to music, and how you’re similar and different to the other participants.

How does that sound?”

Subject Response. Continue script. If negative skip to 6.

4. [Digression, questions, general discussion etc.]

5. Researcher: “Thank you so much for your time. If you’ve got any more questions I’ve tried to answer everything I can think of on the website, and my contact email is there too. I really hope you participate, it should be really fun. Have a great day.”

OR

6. Researcher: “Thank you for your time. Sorry to have bothered you. Have a great day.”

Appendix L Data management plan

York Data Management Plan (DMP) for Postgraduate Research Projects

Postgraduate researcher: Liam Maloney
Project title: Functions of Listening
Project start/end: 8 th October - 16 th October (provisional, awaiting ethics approval)
Funder (where applicable): N/A
Project context: The study concerns music listening in everyday life. Participants will be asked to log their listening habits 3-4 times a day at random intervals using an online questionnaire. The participants will be in a variety of everyday situations (unable to predict). I am the only researcher on this project.
Defining your data
1a. What data will you produce? The project will produce ESM logs of music listening episodes. The data will concern habits, situations, music employment, external influence, personal responses, and musical features. The data will be collected via questionnaires and produce themes, visualisations, and statistics.
1b. What formats and what software will you use? Data will be collected in Qualtrics with a .csv output Analysis in SPSS and NVivo (.sav and .npx) Written up in word as a .docx
1c. How much data do you expect to generate? 50-100mb. Text responses in a .csv and visualisations from SPSS and NVivo means relatively low file sizes.
1d. Who owns the data you will generate? According to my studentship agreement, the University owns all data I create, but I retain the copyright on publications based upon my data.
Looking after your data
2a. Where will you store your data? Data will exist in four locations: <ul style="list-style-type: none">• <i>Qualtrics internal storage (part of the university network)</i>• <i>University of York Telephony system (phone numbers only)</i>• <i>My university network filestore</i>

<ul style="list-style-type: none"> • <i>An encrypted external backup drive</i>
<p>2b. How will you back-up your data?</p> <p>The data will be backed up via FTP connection to the university filestore and on an external encrypted backup drive.</p>
<p>2c. Who else has a right to see or use this data during the project?</p> <p>Only myself, my supervisors, and the department's music psychology lecturer will see the data during the project. The inclusion of the music psychology lecturer is necessary to aid in analysis.</p>
<p>2d. How will you structure and name your folders?</p> <p>The file structure for storage will be as follows: <experiment><participant number and_username>/<log number></p> <p>There will be an additional section for analysis and outputs as follows: <experiment><analysis><participant number and_username>OR<cohort_analysis></p>
<p>2e. How will you name your files?</p> <p>Within the structure files will be names as <log number_username></p> <p>Log number will be four character numbers i.e. 0192</p>
<p>2f. How will you manage different versions of your files?</p> <p>There is only ever one version of each data file - new experiments create new data, which are stored in a new set of files.</p>
<p>2g. What additional information will be required to understand your data?</p> <p>An additional csv. regarding participant demographic data will be kept and referenced as part of the analysis process. Contact data will be retained during this process but deleted upon completion of analysis and results shared with individual participants.</p> <p>There is no metadata beside log number.</p>

Archiving your data
<p>3a. What data should be kept or destroyed after the end of your project?</p> <p>All contact data will be deleted at the end of the analysis project.</p> <p>Demographic data and data logs will be retained for 10 years and available at request.</p>
<p>3b. For how long should data be kept after the end of your project?</p> <p>In line with the University Research Data Management Policy, the data that will support my published research findings will be kept for 10 years from date of last requested access</p>
<p>3c. Where will the data you keep be stored at the end of the project?</p> <p>My data may be published as supplementary information to support a publication.</p> <p>It will also be kept as an addendum in the thesis library.</p>
<p>3d. When will you archive your data?</p>

I will provide a copy of the data supporting my thesis to the University for long-term retention when I submit my thesis.

Sharing your data at the end of the project

4a. What data should or shouldn't be shared openly and why?

All of my data may be shared openly at the end of my project when my research findings are published. This may only occur once data has been deleted concerning contact details.

4b. Who should have access to the final dataset(s) and under what conditions?

Bona fide researchers will be granted access to the data upon request. It should NOT be shared with commercial bodies.

4c. How will you share your final dataset(s)?

A copy of the data supporting my thesis/publication will be retained by the University and users will be able to download my data from the York Digital Library (YODL).

Implementing your plan

5a. Who is responsible for making sure this plan is followed?

I will take responsibility for carrying out the actions required by this plan and report them to my supervisor as appropriate

5b. How often will this plan be reviewed and updated?

My supervisor and I will review this plan every 6 months and will agree updates if necessary.

5c. What actions have you identified from this plan?

Ensure that I request informed consent from my participants for archiving and sharing their data.

Identify a suitable repository/archive to deposit my data with after the end of my project and contact the repository to find if and how to deposit my data with them.

5d. What policies are relevant to your project?

This project is covered by the University of York Research Data Management Policy

5e. What further information do you need to carry out these actions?

Ethics approval and supervisor advice. I feel I have the information required to fulfil my DM obligations.

Signed: Liam Maloney	Version: 1
Date created: 8 th August 2017	Date amended:

Based on an original document created by [DataTrain](#) and adapted by the [DaMaRO Project](#).
Further adaptations by the University of York.



Appendix M Functions of listening: Study flyer



Are you listening to music right now?

I'm a PhD researcher at the University of York. I'm about to run an experiment exploring how people listen to music in everyday life and what benefits it can have. The experiment is very simple, you just need to fill in a log of your listening over a week.

To thank you for participating in the study you'll receive a personalised listening report covering how you listen, where music is most effective for you, and how you compare to other participants in the experiment.

All the information about the project and how to sign up:

www.functionsoflistening.org

Thanks for your time!

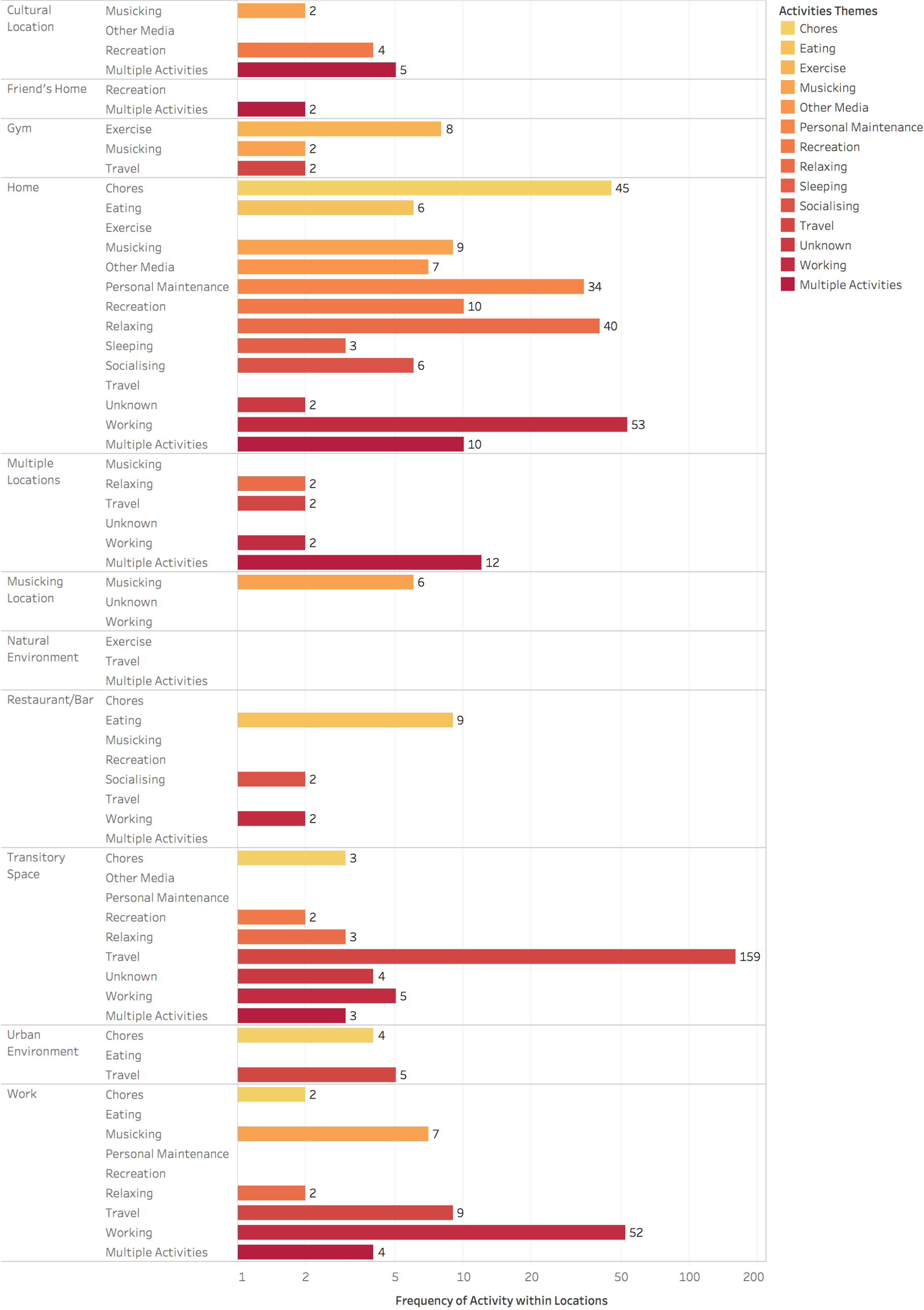


Functions Of Listening

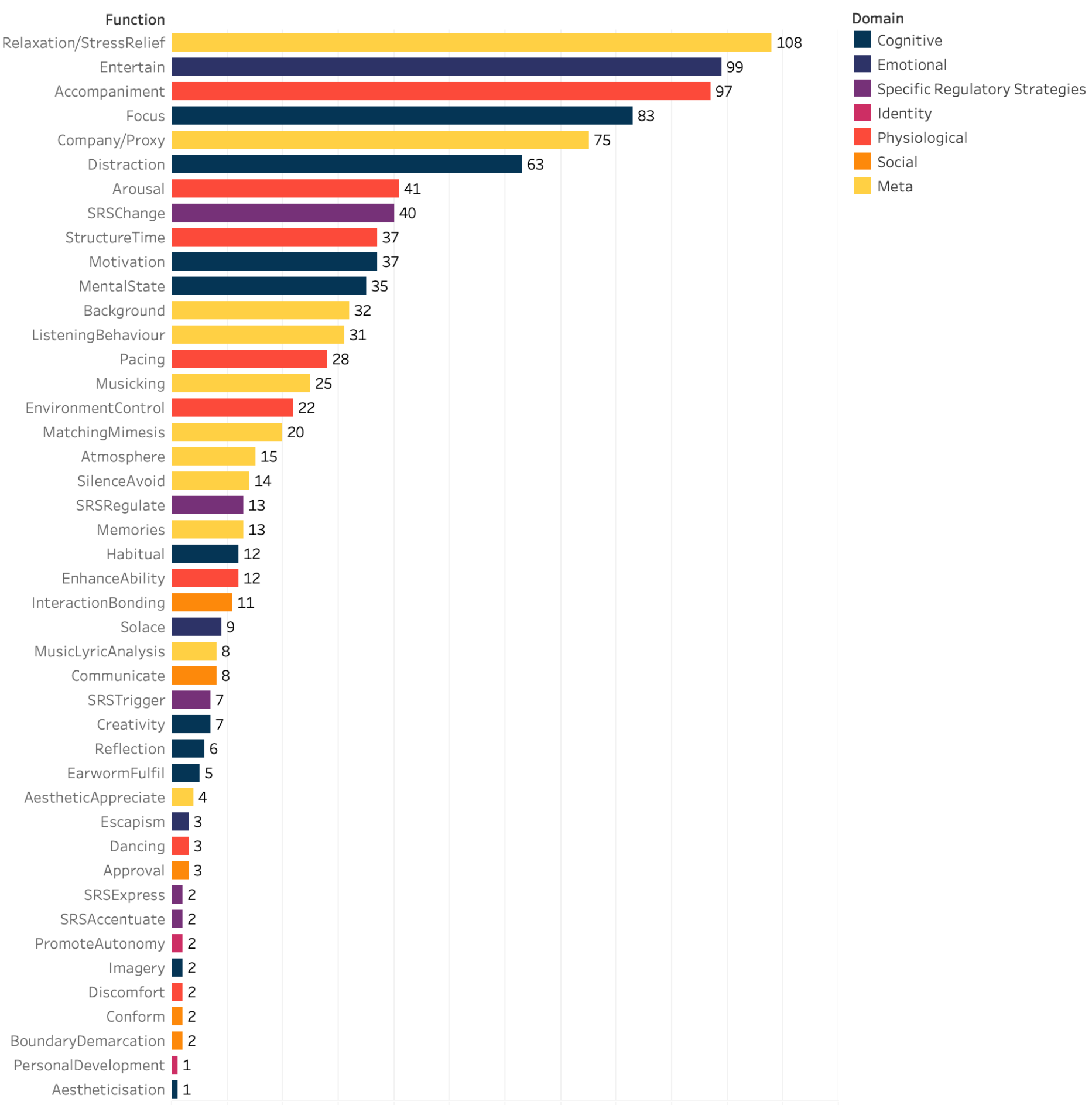


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Appendix N Cross-referenced activities and locations (logarithmic scale X-axis)



Appendix O Functions in the ESM data by frequency



Sum of TFI for each Function. Colour shows details about Domain. The marks are labelled by sum of TFI. The view is filtered on Function, which excludes 8 members.

Glossary of Abbreviations, Terms & Definitions

ATFF: ‘aggregate thematic functions framework’

CFF: ‘consensus functions framework’

Context: the circumstances in which listening occurs. Circumstances may include elements of intrapersonal, interpersonal, physical, and ideological constructs and relationships. Context gives rise to goal orientation.

Contextual Triad: the circumstances in which listening occurs. Circumstances may include elements of intrapersonal, interpersonal, physical, and ideological constructs and relationships. Context gives rise to goal orientation.

Employment: music drawn into action or used for a specific function (see Function) or purpose. The term is used to avoid conflation with the term ‘use’.

Engagement: music as being heard, listened to, ‘used’ (see Use), or employed (see Employment). The broadest or most general term applied to all music listening. It does not infer any specific utility, intention, functionality, level of attention, or goal.

ESF: ‘experience sampling form(s)’

ESM: ‘experience sampling methodology’

Function: the thesis uses Merriam’s definition of function as concerning “the reasons for (music’s) employment and particularly the broader purpose which it serves” (Merriam, 1964). The terms ‘function’ and ‘function(s) of music’ is purposefully absent in earlier portions of this thesis.

Functionality: the thesis uses a rephrased version Schäfer’s definition of functionality to refer to the deliberate employment of music to attain specific goals in specific situations (Schäfer, 2016).

Goal(s): the thesis uses Locke *et al.*'s definition of goals; "immediate regulators of human action" (Locke *et al.*, 1981).

Goal Attainment: the act or process of achieving or attaining specific goals through directed action. Conscious awareness of said goal or its attainment is not a pre-requisite condition.

Goal Orientation: the act or process of identifying and perusing specific goals through directed action (sometimes referred to as 'Goal Setting', see Locke, 1991). Conscious awareness of said goal is not a pre-requisite condition.

Listening: unlike most research, this thesis does not draw a distinction between active 'listening' and passive 'hearing'. The diametric binary inherent in these terms is not beneficial. Unconscious, accidental, or undesired listening occurs regularly, making defining the level of engagement problematic. As such 'listening' shall be defined as the act or process of experiencing music through aural stimuli (not written notation) regardless of listener awareness or control. The term 'hearing' will not be used.

Mechanism: The physiological or neurological processes by which music affects us. See Juslin (2012).

MOP: refers to the University of Sussex 'mass observation project'

Music: the thesis uses Blacking's definition of "humanly organized sound" (Blacking, 1974). Furthermore, this reinforces the listener as agent in their listening praxis, enabling the listener to define what they feel is music.

Musicking: the thesis uses Small's definition of a *process* related to music performance. "To music is to take part, in any capacity, in a musical performance, whether by performing, by listening, by rehearsing or practicing, by providing material for performance (what is called composing), or by dancing." (Small, 1998). Listening in this context only refers to listening in live, Western art music concert environments and is largely 'analytical' listening.

SMS: 'short message service' i.e. a traditional text message that does not use internet connectivity.

Technology: the thesis uses two of W. Brian Arthur's definitions of technology. Firstly technology is a "means to fulfil a human purpose" and "may be a method or process or device" (Arthur, 2009). The latter definition refers to "technology as the entire collection of devices and engineering practices available to a culture" (ibid.).

Use: the thesis uses Merriam's definition of use as referring "to the situation in which music is employed in human action" (Merriam, 1964). Furthermore, use may also refer to wider contextual influences in addition to merely situational/location influences.

Utility and Utilitarian: as possessing utility, usefulness, or function. Such utility is the primary function of the object (or music). The singular noun 'utility' is also interchangeable with 'resource'. The phrase does not concern 'utilitarianism' as an ethical stance or theory, and does not relate to the work of Jeremy Bentham.

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