‘What makes songs catchy’: A cognitive analysis of melodic hooks in twenty-first century popular music

by

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Submitted in accordance with the requirements
for the degree of

MASTER OF MUSIC

in the subject of

Musicology

at the

UNIVERSITY OF SOUTH AFRICA

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Date submitted: 30 January 2019

Declaration

I declare that **'What makes songs catchy': A cognitive analysis of melodic hooks in twenty-first century popular music** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

I further declare that I have not previously submitted this work, or part of it, for examination at Unisa for another qualification or at any other higher education institution.

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Key Terms:

Music cognition; Gestalt Theory; Implication – Realization Model; musical expectation; Musical analysis; Pop music; Pitch; Interval; Expectation; Catchy; Melodic analysis; Musical hooks

Abstract

What is it about the vocal melodies of popular music that make you want to listen again and again? This music-theoretical study applies principles of Gestalt psychology and theories of expectation to a study of melodic hooks in 21st-century popular music. The hypothesis tested here is that melodic hooks are a vital element in “catchiness”. Transcription and analysis of melodies by major recording artists is used to explore the note-to-note basis for melodic hooks. The analysis of recordings by Adele, Carly Rae Jepsen, Pharrell Williams and Robin Thicke shows how factors of repetition, familiarity, simplicity, resolution, ambiguity of key, and expectation all contribute to the sense of catchiness in music. A listener-response study was used to test the experience of catchiness in the case studies, and corroborates the hypothesis that catchiness depends principally on expectation as an overarching factor. The study also uses auto-ethnographic reflection on the practice of song-writing to give insight into strategies for creating catchy popular songs. The experience of composing a pop song, and releasing it on air, provides unique insight into the artistic process. The results of all these studies show that the perceptual principle of expectation is a crucial factor in the experience of catchiness.

Isicatshulwa

Zingantoni izandi ezimnandi zokuvuma ezivakalayo zomculo odumileyo okubangela ufune ukuwuphulaphula njalo njalo? Olu phononongo lomculo ngokwenkcazelo eyingcingane lusebenzisa imigaqo-siseko yemeko yengqondo iGestalt (Gestalt psychology) kunye neengcingane (theories) zokulindelweyo kufundo lwezandi ezinomtsalane okubambayo kumculo wenkulungwane yama-21 Ulwazi oluyingcamango engenabungqina oluhlolwe apha kukuba izandi ezimnandi zokuvuma ingoma ziyinto ebalulekileyo "ekubambeni lula". Ukubhalwa kunye nohlalutyo lweengoma ezenziwa ngabaculi abaphambili bokushicilela kusetyenziselwa ukuphononongа isiseko senowuthi ukusuka kwenye ukuya kwenye inowuthi ngokwezibambo zokuvakala kwezandi. Uhlalutyo lokushicilela luka-Adele, Carly Rae Jepsen, Pharrell Williams kunye noRobin Thicke kubonisa indlela izinto eziphindaphindwayo, zokuqheleka, zobulula, ukusombulula, nobumbolombini kwikhi kunye nokulindelweyo konke kunegalelo kumba wokutsalwa ubanmbeke emculweni.

Uphononongo lokusabela komphulaphuli lwasetyenziswa ukuvavanya amava okufumana ifuthe lomtsalane kwizifundo zabucala, kwaye zihambelana nengcinga yokuba ukubamba kuxhomekeka ikakhulu kulindelo njengeyona nto iphambili. Olu phononongo lukwasebenzisa imbonakalo ezenzekelayo kwinkcazo yenzululwazi ngeentlanga kumsebenzi wokubhalwa kwengoma ukunika ukuqonda ngeendlela zokuyila ingoma ezimnandi ezidumileyo. Amava okuqamba ingoma ye-pop, kunye nokuyikhupha emoyeni, inika ingqiqo eyahlukileyo kwinkqubo yobugcisa. Iziphumo zazo zonke ezi zifundo zibonisa ukuba umgaqo-siseko wengcingane yokulindelweyo luphawu olubalulekileyo kakhulu kumava okubamba.

Kafushane ngocwaningo

Ingabe yini eyenza iminkenenezo yomculo odumile ikukhange futhi ikuhehe ufise ukuwulalela kaninginingi? Lolu cwaningo lwethiyori yomculo lusebenzisa imigomo ye-*Gestalt psychology* kanye namathiyori alokho okulindelekile (*theories of expectation*) ukucubungula nokuhlaziya amavesi eminkenenezo emnandi futhi ekhangayo yomculo odumile wekhulunyaka lama-21. Ihayiphothesisi ehlolwayo lapha wukuthi amavesi eminkenenezo emnandi futhi ekhangayo ayingxenye esemqoka kakhulu "ekukhangeni" komculo. Ukubhalwa nokuhlaziywa kweminkenenezo yabaculi abayizikhondlakhondla abaqopha umculo kuyasetshenziswa kulolu cwaningo ukucubungula inothi nenothi levesi lomnkenenezo omnandi futhi okhangayo. Ukuhlaziywa komculo oqoshiwe ka-Adele, Carly Rae Jepsen, Pharrell Williams kanye no-Robin Thicke kuyabonisa ukuthi izinto ezinjengokuphindaphinda, ukujwayeleka komculo othile, ubulula bomculo, ukuguquka kwenothi lomculo libe ngumnkenenezo ohlabahlosile (*resolution*), ukungaqondakali nokungaqiniseki ngokhiye womculo (*ambiguity of key*), kanye nalokho okulindelekile, konke kuyizinto ezilekelelayo futhi ezifaka isandla ekukhangeni komnkenenezo womculo. Ucwaningo lwendlela abazizwa ngayo abalaleli bomculo lwasetshenziswa ukuhlola ukuthi bakhangekile yini labo balaleli bomculo, kwizincwaningo-zigameko zokulalelwa komculo, futhi lolu cwaningo lwasekela lwaphinda lwaqinisekisa ihayiphothesisi ethi ukukhanga komnkenenezo womculo kuncike ikakhulukazi kulokho okulindelwe ngumlaleli womculo njengombandela-ngqangi wokuheheka nokukhangeka kwakhe. Ucwaningo lusebenzisa futhi nokuzibandakanya komcwaningi (*auto-ethnographic reflection*) enqubweni yokubhalwa kwamaculo ukuze athole ulwazi olunzulu futhi aqondisise kahle amaqhingasu okuqamba izingoma ezidumile ezinomnkenenezo omnandi futhi okhangayo. Ukuzibandakanya enqubweni yokuqamba ingoma yomculo we-*pop*, kanye nokuyikhipha ukuze idlalwe emisakazweni, kuhlinzeka ngethuba eliyingqayizivele lokuqonda ngokujulile inqubo yokwenza umculo. Imiphumela yazo zonke lezi zincwaningo iyabonisa ukuthi umgomo wendlela-kuhumusha izinto ngokwalokho okulindelekile wumgomo osemqoka kakhulu ekufikelweni komuntu ngumuzwa wokukhangwa nokuhehwa ngumnkenenezo.

Acknowledgements

Current work experience within the South African music publishing industry has proven valuable to this study since direct access to international and local songwriting information is readily available. Furthermore, the appropriate permissions required for the use of copyrighted material for further research were obtained through knowledge of the requirements and process needed in accordance with the South African Copyright Act. As outlined in UNISA's 'Policy of Research and Ethics' this research was conducted in accordance with the research principles set out in the aforementioned document.

The most special and heartfelt thank you to Linda Grevler, David Grevler, Shelley Becker, Ouma, Adrian Erasmus, Gregory van Kerkhof, Candice Armitage, Universal Music Publishing Group, Ryan Hill, Dr Thomas Pooley, Leonie Viljoen and my wonderful husband, Rodney van der Bergh.

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List of abbreviations

I-R	Implication-Realization model
UMPG	Universal Music Publishing Group
ITPRA	Imagination, Tension, Prediction, Reaction, and Appraisal
RD	registral direction
ID	intervallic difference
IP	intervallic process
P	process

CHAPTER 1

INTRODUCTION

Suppose you are on your way home from work and you hear a song on the radio. This is the first time you have heard this particular composition and you instantly find it enjoyable. Once the song ends, you feel the need to hear it again, so you listen carefully to the DJ when she provides you with the artist's name and the title of the song. As soon as you arrive home, you proceed to your computer and purchase the artist's album, so you can listen to all their songs, but particularly the song you found so enjoyable on the drive home. Now that you have access to the song wherever you go, you find yourself listening to it over and over until you decide that it is your favourite song. Even after other songs have grabbed your attention in a similar way, you hold this song in high regard and add it to your list of great tracks that you always go back to in order to listen to again. When you get into discussions with friends about music, and you bring up this song, you often find that they and others have had similar experiences when they first heard the piece. They explain that this particular song grabbed their attention in a way that others have not. Further, you find that there are many other songs that elicit similar experiences and that these songs generally have the same effect on others as well.

What is it about songs like these that makes you listen again and again? Could it be that there are commonalities between these songs that we can identify? There is clearly a difference between songs like the one you heard on the way home and other songs that do not elicit similar reactions. The answer lies in *catchiness*. The aim of this dissertation was to identify patterns in the vocal melodies of twenty-first century hit pop songs, and to explain why they are *catchy* in terms of cognitive principles. I tested the hypothesis that musical *expectation* is a key feature of catchiness in the vocal melodies of pop songs in the twenty-first century.

1.1. RATIONALE AND BACKGROUND

The concept behind the initial idea for this research came about while completing a BA Honours Music Business Degree at the Campus of Performing Arts in 2012.

The dissertation was a first attempt to outline a somewhat scientific formula for creating a hit pop song from the perspective of the musician, songwriter, and record label to better 'sell' commercial music. The concept and application of gestalt theory was crucial to this work. The dissertation drew on concepts of gestalt theory that inform songwriting techniques relating to lyrical content, theoretical form, studio production techniques, hook writing, chord progression, and hit song science in the form of algorithms. Accompanying the written section of the dissertation was a practical component that included the crafting, recording, mixing, mastering, and the commercial digital release of a pop song/single and a music video that was recorded by the original pop music group Lacey May. The single was titled *Back to Shore* and gained nationwide attention relatively quickly with the assistance of a major record label and music publishing company, including a small digital marketing campaign. Although *Back to Shore* charted on local radio charts and received airplay on various television channels, it did not acquire *hit* song status on commercial radio, television or digitally. The single's apparent failure in respect of becoming a hit song has encouraged much deliberation and critical thinking after the single's results were presented in the final Honours dissertation in 2012.

The most intriguing of the compositional techniques that were researched in my previous study was that of crafting a melodic hook within a pop song. It appears that there is a gap in the literature relating to the analysis of musical hooks and catchiness in twenty-first-century popular music and this has led to the question set within pop music composition: what is catchiness?

Gary Ewer (2014) describes several principles of hook writing techniques that I have employed in my own pop songs. These principles include crafting brief melodic hooks with simple rhythms and an attractive succession of pitches.

It is important to recognise that melody (pitch) cannot be understood in isolation when studying and crafting hooks. Other parameters also need to be factored into the mix. Generally, rhythmic elements are relatively simple and easy to remember, but with some variation (often syncopation) to create a groove (Ewer 2014). Studies have revealed that strong beats in music arouse the brain and trigger our brainwaves to resonate in time with the rhythm (Saarman 2006). Justin London has shown that abilities for entrainment are important in attending to time.

> [M]eter is a musically specific instance of our more general capacity of entrainment, the sympathetic resonance of our attention and motor behavior to temporal regularities in the environment. Composers and performers often play on our metric abilities, either through their careful choice of tempos that tickle one or more metric thresholds, or in their use of patterns that invite but then thwart our ability to form coherent metric cycles. (London 2012:190)

Because humans entrain to metre in similar ways it is possible for composers of melodies to play with our metric expectations in culture-specific ways. Leonard Meyer (1956), Eugene Narmour (1990), and Carol Krumhansl (2000a) have demonstrated the same principle for pitch. It is through playing with combinations of pitch and rhythmic phenomena that are trained to our inherent and learned capacities for entrainment and expectation that hooks are created. This is the starting point for establishing what makes some songs ‘catchier’ than others.

The combination of rhythm, pitch, and timbre in the audio stimulus has a maximum effect on brainwave frequency. Sound alone has the power to stimulate global brain activity (Peretz & Zatorre 2003). A study of all factors relevant to hooks in popular music is beyond the scope of this dissertation. Instead, I will focus primarily on melody, but always within the context of other parameters, including rhythm, harmony, texture, and lyrics. These additional parameters will be presented in the staff notation transcriptions of each song described in the analytic section of this study.

1.2. CORE LITERATURE

A rather extensive array of methods has been developed since at least the 1930s to study the cause and effect of musical expectancy, including production, memory, detection, priming, and structural judgements (Krumhansl 2000b:57). This kind of diversification in research has exhibited a wide variety of conclusions and results, but it has also pointed out some of the difficulties in examining a continuing and open-ended psychological mechanism such as musical expectation. It seems that in many cases the stimulus materials used in the studies range from confined intervals to more extended melodic passages. Still, there is a gap in the literature on pre-existing melodic passages set within popular music in the twenty-first century. Do these popular melodies exhibit musical expectancy, and what is the psychological effect they have on the listener? We must examine past literature and experimentation to establish the principles of musical expectancy, and how these theories have been developed and expanded upon over time.

The core concepts that my research employed are described in Leonard Meyer's *Emotion and Meaning in Music* (1956). Meyer united gestalt theory and the philosophy of John Dewey and Charles Sanders Peirce. It might be the case that we can combine Peirce's pragmatic concept of meaning, his abductive reasoning, and semiotics to describe the presence of emotion existing in music. Peirce (1878) proposed that any consistent reaction to an occasion or event will be united together with the understanding of that event's desired effect, its 'meaning' (Peirce 1878). This concept was expanded upon by Dewey, Hofstadter, Albert and Kuhns (1964), who suggested that if the response were hindered by an unforeseen event, then an emotional response would follow over the event's 'meaning'. These were the core ideas that Meyer adopted as the foundation to conceptualise his theory of musical expectation set in particular cultural or ethnic contexts with meaning and emotion. His theory depends on a psychological perception-based approach to music and the emotion generated by it (Meyer 1956).

Meyer discovered that the emotions a listener experiences transpire through the cognitive development of music's recognised patterns. Meyer demonstrates his theory with an analytical system based in psychological principles. Meyer focuses on 'affect' as the outcome of expectancy and formulates this idea by claiming an "affect or emotion-felt is aroused when an expectation – a tendency to respond – activated by the musical stimulus situation, is temporarily inhibited or permanently blocked" (Meyer 1956:31). From this we can deduce that an expectation is a combination of comprehensive perceptual philosophies that have been examined in the field of gestalt psychology. Meyer's student Eugene Narmour took these ideas much further in his books on melody (Narmour 1990, 1992). The implication-realization (I-R) theory categorises melodic sections based on interval size and direction and hypothesised expectedness of each segment by directly allocating a prediction of expectedness to each occurrence. Furthermore, in a non-musical context expectation and expectancy constitute a forecast based on current affairs that have bearing on oneself. A person may be motivated to act or react due to the predicted outcome of the present state of affairs. On the other hand, expectation in a musical context is defined as a sense of certainty that something will occur or continue within a piece of music based on one's interpretation of the music in question.

Narmour's theory of melody has been tested by several scholars (Krumhansl 2000b; Schellenberg 1996). Krumhansl shows in her studies that musical expectation plays a vital role in the behaviours of the listener, which include perception, speech understanding and production, and skilled performance (Krumhansl 2000b:57). Krumhansl demonstrates two core findings in her research. The first is that several studies of musical expectancy expose a music listener's ability and awareness to psychologically process various musical patterns to organise and remember the said melody. The second finding of her studies demonstrates the effective processing of auditory information over a certain period, with continuously changing expectancies from subsequent events which may have implications for emotional responses.

Narmour established his hypotheses grounded in the gestalt principles of proximity, similarity and common fate that Meyer had first described. Narmour vindicated two systems of psychological processes that take place concurrently in the cognition of melody, namely bottom-up processing, which does not involve prior knowledge, and top-down processing, which describes the incoming perceptual stimulus by relating it to prior knowledge obtained through experience. (I elaborate on these two cognitive processes in the paragraphs below). These two systems provide a comprehensive grounding for the deconstruction and analysis of melody.

Narmour's I-R theory expands on Meyer's ideas in determining which cognitive processes are learned via experience and those that are innate. Thus, the I-R theory presents a model of how melody is processed in the mind of the listener. Narmour (2015) claims that the I-R model categorises the music listener's cognitive response to the musical stimulus, and he offers the I-R model as an object for experimental test. Narmour's musical analysis is slightly less from a psychological perspective, like that of Meyer, and far more from an analytical viewpoint with a set of testable hypotheses. His hypotheses describe and establish a phenomenon of note-to-note expectancies that develop over time.

The theories described by Meyer and Narmour and the foundational principles of gestalt theory upon which much current work on expectation is based (Huron 2006; Gjerdingen 2013) form the basis for this analysis of hit pop songs. This analysis is directed at identifying patterns in the vocal melodies and explaining why they are catchy in terms of cognitive principles. More specifically, the analysis of vocal melody in pop music using the concept of gestalt practices and the work of Meyer (1956) and Narmour (1990) suggests that the perceptual principle of expectation may contribute greatly to the experience of catchiness in popular music of the twenty-first century.

In *The Analysis and Cognition of Basic Melodic Structures: The Implication-realization Model* (Narmour 1990), Narmour provides an alternative method of musical analysis to that of Heinrich Schenker.

Schenkerian analysis is a method for analysing classical Western music and popular music using methods of reduction. Inessential notes are excluded to emphasise the important relationships between them. Classic music theory concentrates on two aspects of pitch: harmony and counterpoint. Heinrich Schenker (1868–1935) felt that both harmony and counterpoint were being misinterpreted and focused on elaborating and correcting (what he saw as) the mistakes of previous theorists (Pankhurst 2008). Schenker suggests that pieces of music can be comprehended and realised as expansions of a concept termed the *Ursatz* (the fundamental structure). Ursatz is the foundation for a systematic and reductive method of analysis that demonstrates the fundamental simplicity of music, presenting how musical works are elaborations of a tonic chord. However, the aim of Schenkerian analysis is not only to condense a musical work to the Ursatz, but also to investigate the intricacies of the work as a mode of interpretation. The emphasis, then, is not on the reductions of the analysis but the elaborations of the composer (Pankhurst 2008).

It has been argued that Schenker's theories are stylistically specific and applicable to a very precise repertoire of German instrumental music of the 18th and 19th centuries, with some exceptions (Narmour 1979). These are the works that Schenker considered "masterworks", although Schenker assumed his theory to have universal validity (Gallardo 2000). I attempted Schenkerian analysis on the commercial pop song *Happy* by Pharrell Williams (Ford 2014), focusing on the 18 bars in the chorus section. I concluded from this analysis that Schenkerian analysis is not the most suitable for this project because the five pop songs selected for this study do not conform to I-V-I patterns proposed for Schenkerian analysis. This type of analysis might not be suited for modern pop music because modern pop compositions are less complex than the classical/instrumental music of the 18th and 19th centuries. To reiterate, the goal and purpose of the Schenkerian analysis is to understand the fundamental structure of tonal music and to ultimately aid in reading the musical score according to that structure. Narmour proposed an alternative to Schenkerism: that is, the implication-realization model (I-R) discussed above. As mentioned, I-R focuses more on cognitive aspects of expectation than on the subjective analysis of the music alone. Because of this focus on musical cognition, Narmour's model of analysis provides a more objective view of how particular melodic structures produce certain expectations. Furthermore, the I-R model is suitable for most types of music including modern pop music; for example, it does not include strict guidelines for returning music themes, or large-scale structure.

The I-R model hypothesises two psychological systems that occur simultaneously in the perception of melody: bottom-up and top-down processes, which Narmour (2015) suggests will determine a musical event's implication. To elaborate: bottom-up processing is the approach where perception begins at the sensory input, also known as the stimulus. This process within perception is defined as 'data-driven'. For example, listening to your favourite song using headphones would establish that the stimulus is an outside source. The human brain can extract the sounds we hear and discriminates features of pitch and rhythm. Top-down processing, in contrast, is described as the progression of identifying patterns using contextual information such as prior knowledge or past experience associated with the stimulus. For example, when listening to a song, our frontal cortex is continually predicting what will follow the previous section and forming new expectations based on the sections of music we have already heard. While we are listening to music, both top-down and bottom-up processing is taking place simultaneously. According to the I-R model, the cognition of melodies can be described as successive points of closure, implication, and realisation. Closure and implication have opposite effects on expectancy for melodic continuation (Krumhansl 2000b:61).

The I-R model suggests five bottom-up processes described in the table below, 1) registral direction, 2) intervallic difference, 3) registral return, 4) proximity, and 5) closure.

Process	**Description**
Registral direction	Smaller intervals suggest a continuation in the direction of pitch while larger intervals suggest a change in the direction of pitch.
Intervallic difference	Smaller intervals suggest similar sized realised intervals, for example: if the registral direction changes, the smaller realised interval is defined as the original interval size within the range of approximately 2 semitones. However, if there is no change in direction, the smaller interval is the original interval within the range of typically 3 or more intervals. Larger implicative intervals imply smaller realised intervals.
Registral return	The melodic structure– *aba*. To elaborate, the second note of a realised interval will be similar to the original pitch (within the range of 2 semitones). This structure describes symmetric patterns; however, these patterns are less conventional as they digress from this symmetry.
Proximity	Small realised intervals are more implied than large intervals, thus implications will be greater for smaller sized intervals.
Closure	This is how the listener of the piece will section melodies based on pitch direction as well as interval size. Closure will arise in the following ways: 1) when a melody changes direction: for example, when implicative and realised intervals are in different directions; and 2) when a larger implicative interval is followed by a smaller realised interval.

Figure 1: The Implication-Realization model's five bottom-up processes (Krumhansl 2000b:61)

There have been numerous revisions to the I-R model and it has been simplified, lessening the investigation into two core methods. To elaborate: a series of experiments have been conducted to determine the I-R model's account of note-to-note expectancies for melody continuation. These studies have shown that the simplified model predicts data equally as well as the original I-R model. Thus, a revised and simplified model did not result in a loss of predictive power for any of the experiments (Schellenberg 1996). For example: the experiments by Krumhansl (2000b) examine the I-R model's notion that the principles of perceptual organisation determine melodic expectation. It so happens that these principles do not depend on intra-opus knowledge; that is, pre-existing knowledge of the piece in question, or extra-opus knowledge; that is, knowledge of the style of the music. The principles depend only on the perceptually immediate musical context (Krumhansl 2000b). Krumhansl examines only the bottom-up cognitive process in her experiment on a tone-to-tone level. The findings of Krumhansl, and Narmour before her, identified that closure and implication have opposite effects on expectancy for melodic continuation; thus, when a closure occurs, expectancy for melodic continuation is weak. When non-closure occurs, expectancy for melodic continuation is strong (Narmour 1979).

The I-R model proposes various circumstances that provide the music listener with a perception of closure: 1) a rest, 2) a strong metrical position, 3) dissonance resolving to consonance, 4) a short tone followed by a long tone, 5) a large interval followed by a smaller interval, and 6) a change in registral direction (up-to-down, up-to-lateral, down-to-up, down-to-lateral, lateral-to-up, or lateral-to-down) (Narmour 1990). The number of these circumstances present in a musical piece will determine the strength of the closure. In cases where none of these circumstances are present, we can conclude that the pattern is unclosed, and a point of implication is achieved that causes the expectation for continuation of a melody (Krumhansl 2000b:61).

Additionally, there are several new studies and observations that provide insight to this investigation and influence the deliberation of all likely theoretical probabilities in the search for a better understanding of catchiness. Addressing these studies will reduce the apparent gap in the literature surrounding catchiness and hooks and illustrate reasons why this research has gone in this particular direction.

One example is a recent study at the USC Marshall School of Business and SDA Bocconi University, asking the question: Why are some songs more popular than others? In this study conducted by Joseph C. Nunes and Andrea Ordanini (2014), they explored the distinctive acoustic elements of a song and how these differences could influence a musical work's number one position on the Billboard Hot 100 chart or cause it to remain at the bottom of the pop charts below number 90. When asked why a listener likes a particular song, a non-musician might answer, "I like the way it sounds", referring to the song's global sound quality or what might be considered an ineffable combination of instruments and vocals (Radocy & Boyle 1997). The study presented by Nunes and Ordanini (2014) examines how the popularity of a song can be linked to its corresponding chart position by the combination of instrumentation apparent in the musical work. Composers and producers of pop music (especially those involved in hit pop song composition) will more than likely consider the distinctive sound quality of each instrument selected for the piece, known as timbre. Timbre has been described as the blanket term "for everything that cannot be labelled pitch or loudness" (McAdams & Bregman 1979:34) and it is timbre that aids a music listener in differentiating the nature of the sound production of different vocal elements, string instrumentation, percussion, etc. (Nunes & Ordanini 2014). *Timbre mixtures* refer to a "global sound quality of the recording" that enables listeners to identify, classify, and categorise pieces of music (Schellenberg, Iverson, & McKinnon 1999:642). With timbre established as an important and central factor, this study found that timbre mixtures are significant to listeners of popular musical works, and this study provides evidence supporting a systematic relationship between specific instrument combinations and the chances a song has in reaching number one on the Billboard Hot 100 chart (Nunes & Ordanini 2014).

This research by Nunes and Ordanini (2014) investigated how the type of instruments related to the number of instruments in each hit pop song and found that this correlates with a song's popularity on the chart. Hit pop songs from the past 55 years were analysed from the Billboard Hot 100 chart between the years 1958 and 2012. A team coded the audio recordings for 2 480 songs using the types of instruments and vocals audible on each. Two components were established as "sufficient" for number one hit songs. The research found that two groupings of vocal and core instrumentation are used often in number one hit songs, namely: 1) background vocals, synthesiser, and clean guitar, and 2) background vocals, synthesiser, and distorted electric guitar. Eighty-eight per cent of pop songs that had this specific combination of instrumentation made it to a number one spot on the chart, and account for nine per cent of all top songs on the Billboard Hot 100 chart. Three components were established as sufficient in songs that were at the bottom of the chart. Songs that did not move above number 90 on the official charts included different instrumentation, such as: 1) acoustic guitar, acoustic piano, and no strings, 2) clean guitar and acoustic piano, and 3) bass guitar, synthesiser, and no electric piano. Eighty-two per cent of pop songs that comprised this instrumentation were below number 90 on the Billboard Hot 100 chart and account for 23% of all bottom songs. In situations where additional instruments were incorporated along with the core instruments, it seems that this factor did improve their popularity as hit songs. The main difference was that hit songs combined backup vocals while all non-hit songs omitted background vocals. The research also showed that the quantity of instruments present in a song seems to influence its prospect of achievement on the charts. "Our results suggest songs that do not follow conventional instrumentation have the best chance of becoming No. 1 hits. The average song has three to five instruments, but songs that feature a surprisingly low or high number of instruments—at specific points in time – tended to stand out" (Nunes 2007). One of the main conclusions to this study was that most hit pop songs included backup (backing) vocals.

The purpose of the current research was not to advance the notion that backing vocals make hits. Rather, these results demonstrate the salience of vocals in hit pop songs and reinforce the importance of vocal melody as a factor in catchiness. Four of the five pop songs analysed for this study have very prominent backing vocals. Although the lead vocal melody is the primary focus of this study, it is important to consider the importance of the backing vocals in emphasising the lead vocal melodies of each song and contemplate the possibility that the backing vocals may support and accentuate the catchiness of pop vocal melodies in the twenty-first century. Of course, there are many other factors besides vocals that are not controlled for in the studies on backing vocals and instrumentation, for instance the quality of the singing and the structure of the melody. It is the latter I focus on here in testing the theories of Meyer (1956) and Narmour (1990).

1.3. KEY DEFINITIONS

Several key compositional concepts need to be addressed, defined, and positioned within this study as an introduction to the analysis that follows. These concepts are: *melody*, *hook*, and *catchiness*. Understanding these concepts from a musical and psychological point of view builds the foundation for this discussion and better reveals the gap in the literature referred to above. Furthermore, these definitions are necessary for analysing and integrating these concepts into the main aims of my research.

1.4. MELODY

The English Oxford Living Dictionaries (2018a) defines melody as “a sequence of single notes that is musically satisfying; a tune”. Melody, also referred to as a line or voice, is a succession of linear events that contains a change of some kind and is observed as a single entity which includes patterns of changing pitches and durations in the quality of events (Liddell & Scott 1843). Melody is the focus of this research on hit pop songs. I am interested in what makes melodies memorable and appealing, or in what sections of melody are catchiest. This study considers how melody is made memorable by *catching* the listener’s attention. What makes melodies memorable? How is the experience of catchiness tied to specific melodic structures or techniques? This study focuses specifically on vocal rather than instrumental melody. In melody, the ‘change’ is essential for the event to be understood as related or unrelated to its position within the context of the song or piece that is repeated. I consider several factors that structure melody, including: melodic motion and the intervals between pitches, tension, release, and continuity, which will be considered when describing and analysing melodies. The consideration of melodic motion and intervals requires use of the I-R model.

Melody is said to be the emphasis of the piece of music, with the additional sections (the accompaniment) providing the context or background of the piece: "The continuity and diegetic function of almost all vocal melody draw the listener along the linear thread of the song's syntagmatic structure, producing a 'point of perspective' from which the otherwise disparate parts of the musical texture can be placed within a coherent 'image'" (Middleton 1990:264). In other words, the melody of the vocal lines in a piece of music entices the listener as they unravel the piece moment by moment, while acknowledging the subtleties of the accompaniment to understand the piece as a whole.

From this we might conclude that vocal melody is the most significant characteristic of songs when it comes to creating hooks. For this reason, the general focus of this study is that of the vocal melody specifically set within the context of hit popular music of this millennium. One important aspect of the construction of melody in popular music is the *hook*, and at the heart of this study is the phenomenon that arises from hook construction, the experience of *catchiness*.

1.5. HOOKS AND CATCHINESS

This study focuses on hooks, and, more specifically, the phenomenon of catchiness. As with the discussion of melody above, hooks and catchiness necessitate a thorough discussion of their associated concepts and terminology. A 'hook' is defined in this study as a short segment of a song, usually between four and eight beats in duration, which draws a listener in with the intention of grabbing their attention and being the most memorable section of the piece (hooks that last one to three beats may not be of sufficient time to create something memorable). Fellow songwriters have suggested that if a hook exceeds eight beats it may be difficult to remember and may not be retained in the memory of the listener.

A concept that has attracted a certain amount of empirical research is the *earworm*, or songs that contain hooks so memorable that they involuntarily become stuck in one's mind. Literature relating to hooks in popular songs is often linked to information on the phenomenon of earworms, but there is little research distinguishing between generally catchy songs and earworms. It may therefore be important to define these concepts to clarify the unit of analysis for this study. Both catchiness and the concept of the earworm clearly involve the notion of hooks. Honing (2010) defines a hook as the “most salient, easiest-to-recall fragment” (Honing 2010:9) of a piece of music, of which the elements such as melody, harmony, and rhythm are said to be separable. In addition, Honing defines catchiness as long-term musical salience, the degree to which a musical fragment remains memorable over an extended period (Honing 2010). Williamson, Jilka, Fry, Finkel, Müllensiefen and Stewart (2012) describe the experience of earworms as a tune that is recalled by the mind and repeats without conscious control (Williamson et al. 2012).

This study focused on the definition of catchiness presented by Honing (2010). The phenomenon of earworms will therefore not be addressed further in this study as it deals with involuntary musical memory, which was not a primary focus of this research. The aim of this study was to investigate the function of melody in popular music of the twenty-first century by focusing on the ‘catchiness’ characteristic of vocal pop.

The word catchy or ‘catchiness’ in relation to music is defined as pleasing and easily memorable, or, in other words, catchiness is how difficult the tune or song is to forget. On the most basic level, catchy tunes are those that embody a high level of recall in one’s long-term memory. It is with this definition that this study proceeded to answer the question of what is necessary for a song to be considered catchy.

In Chapter 4, through the analysis of four chart-topping pop songs, I conclude that a necessary characteristic of catchiness is expectation, as defined by Narmour and detailed in the previous section. To reiterate, the argument is as follows: a hit song tends to be catchy. For a song to be considered catchy, it must contain vocal hooks that create a level of expectation on the part of the listener. To elaborate: the type of expectation that was identified in the four hit songs included in Chapter 4 is that of Meyer’s (1956) general theory of expectation, where a listener’s musical experience originates from their genuine emotions about the music itself. This serves as the relationship between the music and the feelings the listener experiences in relation to the piece. Meyer (1956) states that because the listener has in mind a whole lifetime of musical experiences, they will react and respond emotionally to the piece as it develops. To conclude: hooks are defined as short, memorable segments of songs that draw listeners ‘in’ and ‘catch’ the listener’s attention. Expectation is defined as the manner in which an individual will behave because of motivation to choose a certain type of behaviour, due to the outcome of that selected behaviour (Oliver 1974). I argue that the play of expectation is the key factor in accounting for hooks in vocal pop music.

1.6. CASE STUDIES

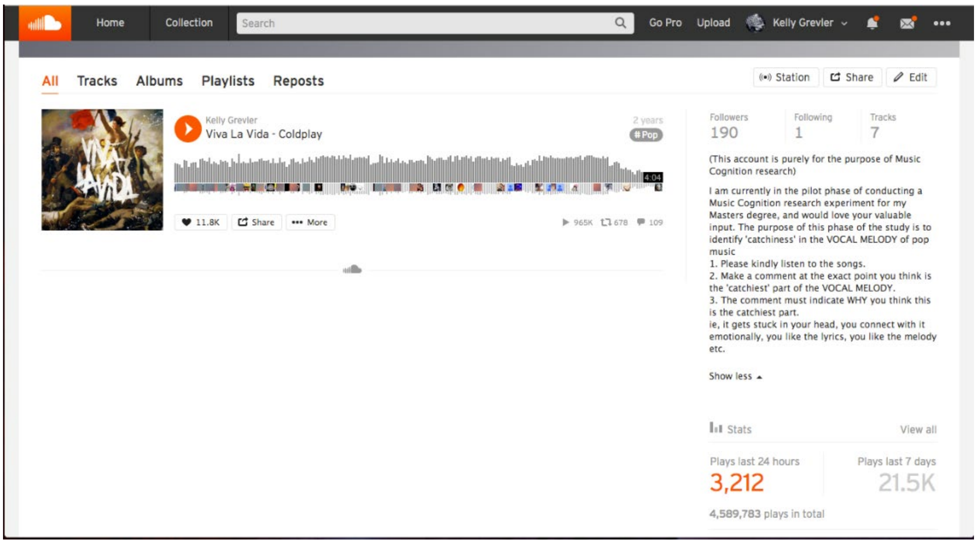
Four number one hits on the Billboard Top 100 provided the case studies for this research. Close analysis and listener reports were used to generate data about the hooks in these songs, and to address the research questions that guided this study: Are there distinctive features to melodic hooks in twenty-first century popular songs? Why are these features catchy or memorable? Do melodic hooks in popular song conform to gestalt principles? What salient features of melody do these songs have in common? What necessary features can we identify in the vocal melodies of these hit songs? Does expectation, as defined in this dissertation, conform to gestalt principles, and if so, how?

The first phase of the research began with an online pilot study via the music streaming service SoundCloud. The purpose of this online experiment was to identify the most popular selection and sections of three songs from the viewpoint of the general public. The pilot study’s design was to evaluate the exact point at which the participants experienced the catchiest moment in the selected songs by means of annotating (in the form of a comment) why it was the catchiest section.

Permissions for only two songs could be successfully obtained. The songs were selected according to their chart success on the official Billboard Hot 100 chart, and the ease with which permissions could be obtained for the purpose of academic research. Both songs selected were published by the Universal Music Publishing Group (UMPG), thus granting permission for educational use was easily attainable due to my full-time employment at UMPG. The songs used with permission were *Gives You Hell* by The All-American Rejects. This song was released commercially in 2009 and achieved a number one spot on the official ‘Billboard’s Mainstream Top 40’ as well as on the ‘Adult Top 40’ chart. *Gives You Hell* also went to number four on the official ‘Billboard Hot 100 chart’. The second song selected was the hit by musical group Coldplay with a work entitled *Viva La Vida*, also released in 2009. This release achieved number one status on the official ‘UK Singles Chart’ and number one on the official ‘Billboard Hot 100’. *Viva La Vida* earned a Grammy Award in the category ‘Song of the Year’ at the 51st Grammy Awards in 2009.

Participants of the study were asked to listen to the songs and leave a comment at the exact point they began to experience the catchiest section of the song. One difficulty with this approach was the lack of control over the participants. Compared to the number of SoundCloud users listening to the songs, very few participated by way of leaving a comment. At the time of writing this paragraph the songs had collectively received 1 852 329 ‘plays/streams’ in total, with only 93 comments. Thus only 0.005% of the SoundCloud users that were listening to the songs actively participated in the study. On the other hand, the lack of control in this preliminary study on catchiness in pop music provided meaningful, if not rudimentary, randomisation of participants. This is nontrivial in terms of results, since we may be able to safely assume elimination of bias in our participants to the greatest extent possible under the circumstances. This may allow us to assume that the results of the online study are reliable.

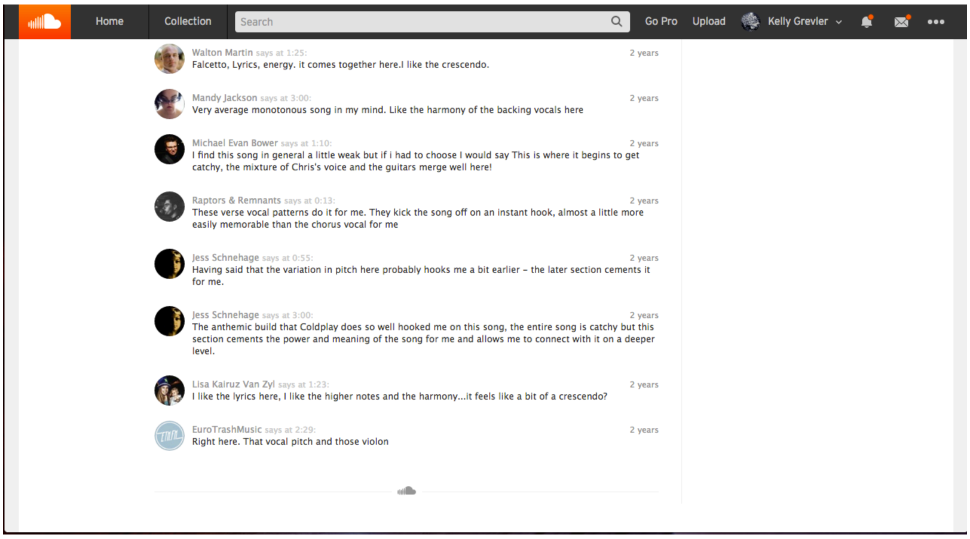
From the online comments one can establish that various participants responded and related emotionally to the songs. Some expressed nostalgia while others related directly to the lyrical content. Participants also indicated that the catchiest sections of the songs included: the rhythm, lyrics, and melodies. The melody was described as repetitive and thus easy to remember. Annotations also described the production and compositional techniques related to the vocals specifically, such as the use of falsetto in sections as well as the use of vocals alone with a steady drum beat behind them (sections that make you want to sing along). These comments proved useful and helped focus and shape the research design. This brief survey shows that many comments describing the catchiest sections of the songs focused on production techniques of vocals, with strong emphasis placed on the lyrics of the songs.


Home
Collection
Search
Go Pro
Upload
Kelly Grevler
All
Tracks
Albums
Playlists
Reposts
Station
Share
Edit
Kelly Grevler
Viva La Vida - Coldplay
2 years
# Pop
4:04
11.8K
Share
More
965K
678
109
Followers
190
Following
1
Tracks
7
Show less
Stats
View all
Plays last 24 hours
3,212
Plays last 7 days
21.5K
4,589,783 plays in total

(This account is purely for the purpose of Music Cognition research)

I am currently in the pilot phase of conducting a Music Cognition research experiment for my Masters degree, and would love your valuable input. The purpose of this phase of the study is to identify 'catchiness' in the VOCAL MELODY of pop music
1. Please kindly listen to the songs.
2. Make a comment at the exact point you think is the 'catchiest' part of the VOCAL MELODY.
3. The comment must indicate WHY you think this is the catchiest part.
ie, it gets stuck in your head, you connect with it emotionally, you like the lyrics, you like the melody etc.

Figure 2.1: SoundCloud study example: *Viva La Vida* – Coldplay


Home
Collection
Search
Go Pro
Upload
Kelly Grevler

Walton Martin says at 1:25: 2 years
Falcetto, Lyrics, energy. it comes together here.I like the crescendo.

Mandy Jackson says at 3:00: 2 years
Very average monotonous song in my mind. Like the harmony of the backing vocals here

Michael Evan Bower says at 1:10: 2 years
I find this song in general a little weak but if i had to choose I would say This is where it begins to get catchy, the mixture of Chris's voice and the guitars merge well here!

Raptors & Remnants says at 0:13: 2 years
These verse vocal patterns do it for me. They kick the song off on an instant hook, almost a little more easily memorable than the chorus vocal for me

Jess Schnehage says at 0:55: 2 years
Having said that the variation in pitch here probably hooks me a bit earlier – the later section cements it for me.

Jess Schnehage says at 3:00: 2 years
The anthemic build that Coldplay does so well hooked me on this song, the entire song is catchy but this section cements the power and meaning of the song for me and allows me to connect with it on a deeper level.

Lisa Kairuz Van Zyl says at 1:23: 2 years
I like the lyrics here, I like the higher notes and the harmony...it feels like a bit of a crescendo?

EuroTrashMusic says at 2:29: 2 years
Right here. That vocal pitch and those violon

Figure 2.2: SoundCloud study example: *Viva La Vida* – Coldplay – comments

Upon further deliberation of the pilot study's design and results, it was concluded that a more intensive approach should be taken regarding the four hit pop songs selected for this study. In Chapter 4, these four songs have been manually transcribed, broken up into distinct sections according to vocal melody with particular consideration of form and similarity. The sections are labelled accordingly and analysed from a theoretical, cognitive, and psychological perspective, drawing on gestalt principles and the theories of Eugene Narmour and

Leonard Meyer. As a result, the songs' construction is better understood going into the final experiment of the study.

In Chapter 6, I outline the results of a study similar to the pilot study conducted on the four selected hit songs. For this study, the design was more controlled. Due to the success of utilising the basic functions of the SoundCloud service, the controlled cross-sectional study used the service to gather data from a selected group of users.

During this phase of the study design, SoundCloud announced that the utilisation of their service for projects such as this would no longer be possible. YouTube was selected because it works in a similar fashion and was used for the controlled listening study. The participants were asked to annotate or comment at specific points of the four selected songs to establish and illustrate exactly where in the song they experienced catchiness and their specific reasons for this. Taking all these elements and observations into consideration, it was established that using a control group of approximately 30 participants is the most appropriate method rather than uncontrolled online participation from the public. The research design of this study incorporated participants of varied age, race, gender, and cultural background. The independent variables were the hit popular songs on the streaming platform and the dependent variables were the survey results and the annotated comments.

The participants were asked to attend the study in a central location; prerequisites were that each participant had access to their own laptop computer of any kind, own headphones, and a YouTube account of their own. Access to Wi-Fi was provided. Participants' user names were kept anonymous. At this central location all participants were asked to proceed to the YouTube account of Kelly Grevler and listen to each of the four selected songs that were uploaded.

The four commercial songs incorporated into this study are:

Happy by Pharrell Williams: This song was released in 2014 and was highly successful, peaking at number one in the United States, United Kingdom, Canada, Ireland, New Zealand, and nineteen other countries. It was the best-selling song of 2014 in the United States and the United Kingdom and became the most downloaded song of all time in the UK in September 2014. *Happy* was nominated for an Academy Award for Best Original Song and spent 70 consecutive weeks on the official UK top 75 chart. A live rendition of the song won the Grammy Award for 'Best Pop Solo Performance' at the 57th Annual Grammy Awards.

Call Me, Maybe by Carly Rae Jepsen was released in 2012 and reached number one on the Billboard Hot 100 and the Pop Songs chart. The song was nominated for two Grammy Awards for 'Song of the Year' and 'Best Pop Solo Performance' at the 55th Annual ceremony and was named 'Song of the Year' for 2012 by MTV. In its 2012 Year-End issue, Billboard magazine ranked this song number 2 in the Hot 100 Songs, Digital Songs, and Canadian Hot 100 charts.

Rolling in the Deep by Adele. This critically acclaimed track was released in 2011 and reached number one on the Billboard Hot 100, where it remained for seven weeks. By February 2012, *Rolling in the Deep* had sold over 7 600 000 copies in the United States, making it the highest selling digital song by a female artist in the United States. The song spent 65 weeks on the charts, giving it at that time the fourth highest number of weeks spent on the charts.

Blurred Lines by Robin Thicke. This controversial song was released in 2013, peaking at number one on the Billboard Hot 100 chart, and was the longest-running number one single of 2013, with 12 weeks at the top. *Blurred Lines* was number one in 14 countries, including the United Kingdom, Australia, Republic of Ireland, France, Germany, Austria, Italy, Switzerland, Canada, New Zealand, and the United States, and the song was also the first to claim the top 'Digital Gainer', top 'Airplay Gainer', and the top 'Streaming Gainer' simultaneously.

In addition to the four selected tracks above, one other song, titled *Tip Toe* by Lacey May, was included in the study. Participants had more than likely never heard this piece before and were asked to provide commentary in line with the study. This song was commercially released and adheres to all the requirements and deliberations of the commercial pop songs composition discussed in this study. Each participant was asked to annotate by means of making one comment either after or during listening at the exact moment they started to experience the catchiest section of the song. The comment had to indicate *why* this was the catchiest section according to the participant's personal opinion.

The analysis of the four hit pop songs above draws on the cognitive music theory of Leonard Meyer (1956), Eugene Narmour (1990), Robert Gjerdingen (1999), Carol Krumhansl (2000a) and other theorists to identify consistent patterns of notes, rhythms, and intervals based in organised patterns of thought and behaviour. The hook in each of the four hit pop songs was identified from participants' survey inputs and then transcribed into staff notation. The cognitive analysis of 'catchiness' used concepts from gestalt theory. The basic gestalt principles of similarity, proximity, good continuation, past experience and return assisted in recognising the organisation of memory and melody, dividing the sections and notes into the appropriate parts, and identifying the relations between them. Elements of the I-R model (Narmour 1990) were applied to clarify the note-to-note relationships of vocal melody to better investigate musical expectation. Elements of Huron's ITPRA theory of expectation was also examined as an additional framework.

CHAPTER 2

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

The theoretical framework for this dissertation is based in the cognitive music theory of the Penn School (see Gjerdingen 1999), and additional readings in the cognitive neuroscience of memory and melody. However, I also draw on my own background in song writing and discuss principles relating to the structure of musical hooks and the various creative elements involved in popular music today. Addressing important hook writing principles assists with understanding the concepts of their construction, consequently leading this study to better describe and identify the phenomenon of catchiness.

The hook, as defined in Chapter 1, is a short, simple, and recurring phrase in a song that tends to be remembered and persistently recalled by listeners, sometimes without an obvious explanation or stimulus. The notion of a hook can be a disconcerting concept for those with keen interest in popular music. As discussed in Chapter 1, the term 'hook' can mean different things to different people in various areas of the music industry. The term itself comes from the music industry and is used to describe a song's 'catchiness' and its marketability (Traut 2005:57). In the context of this study of popular music, the hook is usually located within the chorus of the song. Still, there may be multiple hooks present in the same song (such as in the pre-chorus, the bridge section, or coda). The hook is also described as a lyrical phrase or melody that 'grabs', 'hooks', or 'catches' the attention of the listener and makes the listener *want more*. In this study all hooks are complemented with lyrics. Gary Burns (1987) offers a thorough description of hooks in popular or commercial music, stating that hooks will differ in length from the repetition they contain. The length of a hook can be just one note[1] or it can be a series of notes. The hook could be a lyric phrase, full lines, or an entire verse. The hook is 'what you're selling' (Burns 1987). *"Ideally* [the hook] *should contain: (a) a driving,*

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[1] From personal experience I have found very few hooks in commercial pop songs that comprise just one note.

danceable rhythm; (b) a melody that stays in people's minds; (c) a lyric that furthers the dramatic action or defines a person or place" (Burns 1987:1).

Burns' description of a hook is consistent with my personal experience and critique regarding the construction and implementation of hook writing from record labels, radio stations and music publishers. The hook(s) in music are described by composers and music industry experts to be the building-blocks of commercial hit-song compositions. However, while creating pop songs with hooks for the purpose of radio, I had only a vague understanding of hook writing. The hooks that I assisted with writing came about from trial and error and from my experiences in composing or setting notes and lyrics that sounded weak, notes and lyrics that sounded average, and how these compared with combinations that sounded the strongest. However, I have discovered that in some cases an average hook can be *pushed* by the use of repetition. For example: an average-sounding melody can be repeated many times in the chorus of a song, thus making it memorable or catchy to the listener because of the repetition factor. In some cases, if it were not for the repetition, the melody in question would be easy to forget, thus not constituting a 'hook'. However, Burns states that "repetition is not essential in a hook, but cannot be ruled out either" (Burns 1987:1).

The literature consulted and presented below identifies and explains the cognitive and psychological variations involved in the general topic of melody from a range of perspectives in cognitive science. Some basic concepts from Leonard Meyer and Eugene Narmour have already been touched on in Chapter 1.

2.1. SUMMARY OF LEONARD MEYER AND EUGENE NARMOUR

Leonard Meyer is one of the first and most important contributors in the area of study observing and practising compositional analysis and the aesthetics of music theory focusing mainly on Western music. Meyer's theories presented in his book *Emotion and Meaning in Music* (1956) reveal a solid foundation in psychological observations and psychologically centred arguments in music description. Meyer's scholarly contribution may be described as addressing and revealing the issue of musical meaning and the general approach of musical communication. Meyer derived a methodical system substantiated in psychological and cognitive principles in music theory and then verified in practice.

Meyer (1956) argued that authentic emotions materialise via one's cognitive understanding of the music's formal patterns. To demonstrate his findings, Meyer established relationships between the listeners' emotional responses and the musical patterns of those in which an expectation is developed and then later hindered or denied. An example of this concept is the implementation of the chord progression known as the 'deceptive cadence'. This is where a dominant chord (the fifth note of the scale) – rather than returning to the tonic – will resolve in an unpredictable way. Thus Meyer implied that the significance of a musical piece directly corresponds to the degree in which the intricacies of the piece engrosses the listener. In other words, musical works where none of the listener expectations were met but rather denied, were thought to be ultimately unsatisfying. The same was said where every expectation of the listener was fulfilled. Thus, a delicate balance of fulfilment and denied expectation must be achieved to maintain the listener's attention. This concept is apparent in the songs analysed below: *Happy* and *Call Me, Maybe* deny the listeners' expectations before resolving to the tonic in the lyrical phrases.

Eugene Narmour's goal is a methodical explanation of musical melody that begins at what he describes as the music surface and arrives at a hierarchical description of music through a rule-based model of implication and realisation. Narmour's theories are supported within the field of cognitive science with a psychological element influenced by the theories presented by Meyer. Narmour strives to position the I-R model in subconscious activities and these activities aim to restrict the influence of music style in an analysis firmly based on melody. Even with a model free from musical style there is little literature on the application of the I-R model in the realm of pop music melody of the twenty-first century, thus presenting a gap in literature of this kind.

The foundation for I-R was presented in Narmour's first book, *Beyond Schenkerism* (1979) (touched on in Chapter 1), where he implemented Meyer's theory of the way in which meaning is generated in music (Meyer 1956 & Meyer 1973); however, Narmour's book was a more thorough analysis of the implications of independent parameters of music. *Beyond Schenkerism* presented a system of tonal musical analysis arguing against the philosophies of Heinrich Schenker, whose primary objective was to cognise the fundamental arrangement of tonal music. Narmour's analytical approach is that of hierarchical descriptions or structures of parameters resulting in a network of relationships between the structures of a number of hierarchies (Narmour 1979:127). Hierarchical structure is directly linked with perception and exists as a psychological fact of cognition and of perception (Narmour 1979:133). Briefly addressing hierarchy in this study is useful because we can establish that certain tones function as reference notes – that is, where these notes are constant, repetitive, accentuated rhythmically, and occur at fundamentally significant points within the musical phrase. Distinctions appear in the specific intervals produced by way of pitches within the scale and the specific hierarchical stages allocated to pitches within the scale (Krumhansl 2000b:51). This implies that a description for why these hierarchies occur does not originate from merely auditory information. Rather, the evidence proposed by Narmour (1979) and Krumhansl (2000b) indicates that these hierarchies are effects of human cognition and that they are built on essential psychological principles – suggesting gestalt theory.

In Narmour's (1990) analysis of melody, a note-to-note investigation based on the fundamental parameters of musical sound is explored. The parameters of interval size, direction, rhythmic duration, and dynamic accent are factored into a theory that takes account of the listener's changing expectancies over time. Narmour (1990) postulates that two consecutive pitches (one interval) will imply a third pitch that will be the second interval. Narmour's I-R model hypothesises that melodies can be divided up into three pitches, with the first and second pitch creating the interval of 'implication', and the second and third pitch creating the interval of 'realisation'. Whether the implicative interval (the first interval) is completely realised, incompletely realised or contradicted, will depend on the size of the interval and the registral direction of the interval. These two parameters, interval size and direction, lie at the heart of Narmour's theory (1990). This provides a logical basis for analysing melody. A note-to-note foundation for the analysis of melody already alludes to the possible application of the perceptual principles of gestalt theory. Furthermore, Narmour states that "perceptual laws do not explain music, but music cannot escape their influence" (Narmour 1990).

Narmour proposed to show how a detailed analytical symbology could make the hypotheses of I-R operational (Narmour 1984:84). In the groundwork for such symbology exist three main hypotheses for the I-R model – the first is the implication of continuation that suggests similarity and sameness produce the subconscious expectation of more similarity and sameness, for example A + A will imply A. The second hypothesis is the implication of reversal, where differentiation will imply the expectation of further differentiation, for example A + B will imply C. And lastly, that the above two hypotheses, once defined in both cognition and musical analysis, depend on syntactic parametric scale. The I-R symbols correspond with specific cognitive functions. These symbols are not a summary or deduction but are an analytical translation of music, or in this case melody (Narmour 1984:13).

The note-to-note relationships Narmour describes are important to this study, as every interval appearing in the vocal melody of the chosen songs was plotted out and analysed using theoretical and cognitive principles, thus bringing us closer to understanding the phenomenon of catchiness.

2.2. GESTALT THEORY

Gestalt psychology is the philosophy of attempting to grasp the principles of one's ability to obtain and retain meaningful perceptions in the world around us. Gestalt studies our behaviour and experiences as 'wholes' rather than independently functioning segments. It was Christian von Ehrenfels (1890) who initially presented the concept of gestalt as a general characteristic of consciousness that surpasses its component parts (Von Ehrenfels 1890). This notion displays important qualities, the first being that the whole is more than the sum – Übersummenhaftigkeit (over-summativeness). This refers to our psychological experiences that a sound is more than just the sum of its tonal elements. The concept of gestalt applied to melody can be described as the *melting* of the individual tones into a component. The second quality is that the concept of gestalt can be transposed – Transponierbarkeit (Von Ehrenfels 1890). Gestalt suggests that the human mind perceives the 'whole' without being cognisant of the relationship of its separate parts, and that the core principle of the whole will not be altered when we transpose it. For example, when we 'transpose' a musical piece it will remain the same even if it is played in a different key (more details on this in Chapter 4). For instance, we perceive a melody played at an interval of a fifth or octave higher as possessing the same identity.

It was the early findings of Koffka (1935) that described the work of gestalt psychologists in a musical context, which show "beyond doubt that understanding is not a matter of perceiving single stimuli, or simple sound combinations in isolation, but is rather a matter of grouping stimuli into patterns and grouping these patterns to one another" (Koffka 1935:6). He argued that the prominent characteristic of perception is that the 'whole' is observed before the mind is aware of the separate parts. Since the early writing of Wertheimer (1923), Köhler (1929), and others, substantial literature has accumulated which deals with visual perception of *spatial* gestalt. There appears to be much less literature dealing with the *temporal* gestalt and there are prominent distinctions between visual (spatial) and sonic (temporal) perception, although each comprises components of the other:

> Visual perception changes over time, when we look at moving or changing forms, even when we see a static image our eyes move across it in meaningful patterns. Further, our ears allow us to detect distance and direction, and our musical sensibilities perceive movement in a space defined by such dimensions as timbre (discussed in Chapter 1), pitch, duration, distortion, resonance and so on. (McLean 2005)

The early writings of Meyer (1956) focused on the role of gestalt laws of organisation in expectancy. Problem solving and aesthetic processes are fundamentally uniform. "If expectation results from a structural gap, for example, the delay in completion of the thought process will be rationalized on an unconscious level" (Meyer 1956:88).

Namour's (1990) I-R model is based on the notion that an insignificant number of universal psychological principles affects the expectations of the listener and determines the way in which a melody continues throughout the piece. Narmour describes the perception of melodies in a musical work as a succession of closures, implications and realisation principles (Narmour 1990). Similarly, the proximity principle of gestalt theory is the integration of individual components into a superordinate whole. For example: elements tend to be perceived as combined into groups if they are near each other. This principle was applied to the structure of hooks to identify whether the distance between the notes has any effect on the catchiness of the vocal melodic hook.

About the principle of good continuation, Meyer writes: “this law helps to account for our being able to hear separate, discrete stimuli as continuous motions and shapes” (Meyer 1956:92). The principle of good continuation was used to address how hooks may be heard as ‘continuous motions’ (chunks or schemata) rather than as separate stimuli. This ‘holistic’ principle is clearly an important feature of catchiness because gestalt suggests that the perceptions that appear to create a continuous form are observed as belonging together. For example, in bars 14–16 of *Blurred Lines* we hear the lead vocal melody as a series of continuous phrases broken up into bars that ‘belong’ together, but the backing vocals (sung an octave lower) are perceived as separate from the lead vocal melody but also belong together. We process these as separate but continued events occurring at the same time.

Addressing the principle of return, Meyer quotes Bingham: the *law of return* refers to the fact that “it is better to return to the starting point […], than not to return. The term ‘return’ need not be taken literally; that is, the opening materials may indicate what the final tone of a piece is to be without explicitly presenting it in the opening moments” (Meyer 1956:151). This principle applies to hooks. The resolution and closure of hooks in the context of vocal melodies is an important factor in their catchiness. The principle of return leads the mind to expect a piece or section of music to end with a feeling of completeness. If music (or a hook) deviates from a certain or traditional framework, the expectations of trained music listeners are frustrated, and they may feel a sense of surprise.

The principle of past experience needs to be described in a broad sense: past experience incorporates the immediate past which has recently taken place within a specific musical work (or hook) that will influence the judgement of the listener's expectation as to the approaching subsequent event (Katz 1989). Including the principles of past experience in this study may begin to explain the catchiness of a hook. However, this particular association might not occur in listeners lacking such familiarity to the particular hook. For example, consider the hook from the song *Call Me, Maybe* by Carly Rae Jepsen, which is easy to reference by the lyric: "but here's my number, so call me maybe". Listening to it the first time and in isolation may not indicate that it is a hook. It is only upon repetition of the hook in the song that it takes on its catchiness. In other words, the principle of past experience is reinforced by repetition and informs our expectations and memory for hooks.

Both Narmour (1990) and Meyer (1956) describe the effect that musical expectation has on the experience of melody. As discussed in Chapter 1, the experience and cognition of melody will depend on intra-opus knowledge – pre-existing knowledge of the piece of music, or extra-opus knowledge – knowledge of the style of the music. Thus, we can establish that in the top-down cognitive system, listeners effectively match and associate representative schemata to a present input. This procedure is split into the intra-opus and extra-opus style, where both former knowledge before listening to a composition and immediate knowledge during a composition influence our expectation, illustrating the gestalt principle of past experience.

Narmour's hypothesis of intra-opus style can be demonstrated in the chorus of *Call Me, Maybe*, where bars 15 and 16 present a very similar rhythmic pattern. The same can be seen in bars 17 and 18. Narmour's principle of registral direction (RD) (see above) denotes that small intervals imply intervals in the same registral direction, while the principle of intervallic difference (ID) describes that a small interval suggests an interval similar in size, and a large interval suggests a smaller interval.

Bar 15 shows a change in intervallic motion, i.e. a large to small interval with different registral directions, labelled as [R], and a small interval moving to an identical small interval with different registral directions called intervallic duplication and labelled as [ID].

In bar 16 motion is shown in the same registral direction combined with similar intervallic motion, i.e. two small intervals. The same can be said for bar 17 and labelled as [P]. Bar 16 also shows changing intervallic motion, i.e. a large to smaller interval with different registral directions labelled as [R]. Bar 18 shows intervallic process [IP], which is a small interval to similar small interval with different registral directions.

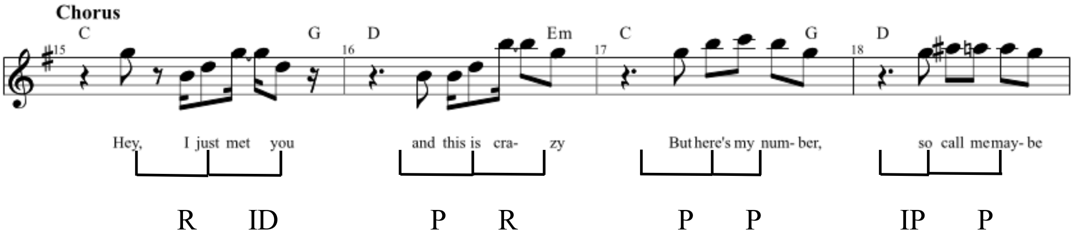


Figure 3.1: Implication Realization example

Thus, the P structure in bars 16, 17 and 18 are small intervals followed by other small intervals of similar size, ultimately fulfilling both the RD and the ID. Similarly, the IP structure satisfies the ID, but violates the RD. Narmour's description of the gestalt principle of closure plays a significant role here as it states that the implication of an interval is hindered when a melody changes direction, or when a small interval is followed by a large interval, as seen in the example above.

2.3. EXPECTATION

In this dissertation the terms 'expectation' and 'expectancy' will mean the same thing, thus expectancy in music plays a key role in many experiments and analyses, especially when it comes to the structural descriptions of music (Huron 2006). The analysis of hooks is no exception. The importance of expectancy regarding the psychological theories within gestalt principles has become an established topic within psychological research, such as work on perceptual organisation (Wertheimer 1923). Examples of expectancy in music substantiated in gestalt principles agree that listeners or participants use patterns to process expectancies for successive events in developing melodies (Meyer 1956; Narmour 1990). For example, music listeners are continually forming expectations about the development of the piece of music, such as the chord progression and how it may unfold. Our expectations about the piece will differ in the strength of our predictions, and we may experience numerous opposing sets of expectations at the same time (Economides 2012). David Huron's ITPRA theory (Imagination, Tension, Predication, Reaction and Appraisal) of expectation provides a framework for the analysis of the natural response in relation to vocal melody and hooks. Like gestalt theory, the ITPRA theory of expectation is broad and can be applied to the actual responses and outcomes of listening to vocal melodies. ITPRA theory comprises two divisions: the responses that occur preceding an anticipated stimulus are tension and imagination, known as the *pre-outcome* response, while the responses that occur due to the expectation's accuracy are prediction, reaction, and appraisal, known as the *post-outcome* response. ITPRA comprises five separate response systems. Our reaction response engages defensive reflexes; tension responses display uncertainty that leads to stress; prediction responses reward accurate prediction; imagination responses facilitate deferred gratification; and appraisal responses occur after conscious thought is engaged (Huron 2006). These responses are essentially the mapping of the physiological routes involved with expectation and are intended to explain and justify "the many emotion-related elements of expectation" (Huron 2006:3).

To elaborate: the ITPRA theory endeavours to rationalise how listeners' expectations arouse several emotional conditions and seeks to answer the question of why these aroused emotions exist and are ultimately beneficial. Our imagination response permits us to envision the conclusion of an event or experience before it has materialised. Thus, envisioning the conclusion while experiencing either pleasure or displeasure serves as a motivator for the result of the event. Expectations such as these can be calculated and conscious, such as when trying to predict how a major record label or radio station may respond to my demo submission email. Other expectations can be involuntary and unconscious, such as predicting a drumstick in motion travelling through the air into a crowd of people and who will catch it. Our tension response is that of the preparation for the imminent occurrence via motor preparation whereby the focusing of our attention occurs. In other words, after the expectation is made about events of the future, we attempt to biologically prepare for the anticipated event. At the point of this preparation phase a tension response can be formulated. For example, the front man of a band at a concert informs the crowd he is getting ready to 'stage dive'; the attendees in the front of the stage form a strong expectation about what will happen, and their bodies prepare to catch him; however, there is a certain level of doubt as to exactly when the 'stage dive' will occur.

Our prediction response presents a conscious awareness for having predicted an outcome correctly or incorrectly as either a reward or warning when the future event occurs. For example, I could anticipate that there may be a thunderstorm this afternoon and I have been booked to perform at an outdoor venue. To my surprise the storm passes and my despondency at being incapable of performing will have shifted to satisfaction at having incorrectly anticipated the weather. In other words, when our expectations are correct, our prediction response is positively balanced, and when our expectations are incorrect, our prediction response is negatively balanced. To apply this to music: when a piece is accurately anticipated, the prediction response will be positive. This positive effect is often said to be improperly accredited to the actual music. To elaborate on this improper accreditation to the music itself, Huron advocates that it is the actual music itself that will have produced the response and not merely the successful prediction. For example, in Western music the dominant chord may present itself more frequently than that of the tonic; however, the listener may be more pleased by the sound of the tonic as it is more predictable than the dominant (Huron 2006:134).

Our reaction response is due to a direct outcome of a pleasing or unpleasing situation. These responses can be impulses such as unconscious reflexes while other reaction responses are said to be learned. The main purpose of this type of response is for the protection of the biological organism. For example: consider a lyric in a printed CD sleeve that is grammatically incorrect. When initially reading the sentence with the grammatical error, a feeling of surprise will occur: the surprised feeling is the reaction response and occurs from an "unexpected violation of a learned schema, namely the rules of [English] grammar" (Huron 2006:92). With music and lyrics, our mind develops schemas at varying degrees of detail parallel to grammar of the English language and when these schemas are violated, a negative reaction response is experienced (Huron 2006).

Our appraisal response comprises analysis and reflection, and occasionally contradicts the reaction responses due to social and contextual factors. For example, in the case of a surprise party, the feelings of fear and shock as the participants yell "Surprise!" would be supplemented by cheerfulness as one evaluates the situation and comprehends that one is actually surrounded by friends. Consider the example of *Call Me, Maybe*. When we start listening, we invoke our imagination response to predict the outcome of this piece. We may predict the potential metre (4/4), tonality, dynamics, and tempo (predication response). Now that we know this information, our tension response is emotionally and physically preparing to hear a commercial pop song with female vocals. The reaction response *to Call Me, Maybe* has most likely met the expectations that were formed. Because of the repetitive nature and predictability of the piece, our expectations have been met and our appraisal response will be that of enjoyment.

2.4. MUSICAL MEMORY

Literature on musical memory often speaks of long-term musical memory associated with brain disorders, such as Alzheimer's disease, several types of dementia, Parkinson's diseases, amnesia and other damages to the brain chemistry of human beings. Studying cases such as these provides insight into the effects of music on the long-term musical memory as it is broadly recognised that our musical memory is thought to be separated from other configurations of memory. However, the mechanisms and neural substrates of musical memory remain poorly understood (Jacobsen, Stelzer, Fritz, Chételat, La Joie, & Turner 2015). Endeavours are regularly made to distinguish musical memory from other well-known memory types such as 'short-term/long-term, implicit/explicit and episodic/semantic' (Peretz 1996). Episodic memory for musical information is defined as "the capacity to recognize a musical excerpt (whether familiar or not) for which the spatiotemporal context surrounding its former encounter (i.e. when, where, and how) can be recalled" (Patel 2003:244–256). Semantic memory aids identifying familiar songs or melodies by naming the tune or by humming / whistling the notes of a melody (Jäncke 2008).

It has been found that musical memory depends on clear and definite 'task-dependent' systems of memory and that memory systems can be severely damaged while musical memories systems remain mostly unimpaired (Samson & Peretz 2005).

What about the musical memory of healthy persons without brain and memory disorders? Upon initial exposure to a new song, a 'healthy' brain will establish new cognitive and neurological connections of sounds, such as: emotional pleasure, song lyrics, song title, the artist, as well as similar sounding songs to characterise the sensory experience (Wesson 2012). This is the reception stage of memory; it involves the processing of sensory inputs of the auditory information available. This information must be compared, sorted, organised, and then filtered to eliminate irrelevant auditory information and enable the relevant information to flow through to other processes (Pickens 2005). Upon listening to the same song an additional time, the brain will process it as a neurologically different experience, where the familiar cognitive connections will be re-activated as recognition. One can now remember the musical work, which did not happen when listening to the work the first time. All new learning pathways are built from existing circuits and are accompanied by changes in brain physiology as a result of experience (Wesson 2012). This is the 'perception stage' of memory and requires retrieving stored auditory information from the memory and integrating it with new information (Pickens 2005).

From the discussion of literature on memory within a musical context, we can establish that memory plays a vital role in the study of hooks and catchiness. When we recognise a hook within a catchy pop song it will evoke in us a strong 'sense of knowing'. To elaborate: suppose you are on your way home from work and you hear a song on the radio. This is now *not* the first time you have heard this particular composition, but you can instantly recognise it without knowing the song title or performing artist. The song will evoke this sense of knowing that alludes to the gestalt principle of past experience. It so happens that once we have heard and remembered the title of the song playing on the radio, the song will be better retained in our memory, because of the text (or lyrical) factor, than just by hearing a melody, or a series of notes, free from lyrics (Peynircioglu, Tekcan, Wagner, Baxter, Shaffer 1998). The discovery of the association between text (lyrics) and music suggests that music is encoded in semantic memory (the memory system that encodes meaning) like that of text. This is especially important because of the nature of pop song and hook creation, where the catchiness could be measured by how well the hook is remembered. The title of the songs and the lyrics in the hooks presented in this study bear the same text; that is, the song titles are sung in the chorus sections of the selected compositions, and thus easily retained in the mind of listener, ultimately aiding in the catchiness of the musical work.

David Huron's (2006) consideration of memory in humans contributes to his philosophy of expectation in a musical context. Huron distinguishes three categories of memory associated with individual types of expectation, namely episodic memory, semantic memory, and short-term memory. Episodic memory is grounded in the actual memory of a piece of music. When a piece of music is quite familiar to the listener, they will have already formed precise expectations for the melody, rhythm and harmony. Semantic memory is analytically learned via cultural exposure and experience. Schemes in music offer a strong prediction for the music even if the listener is not familiar with the piece. Short-term memory is most easily understood in this context because music is highly repetitive, and phrases will form expectations for the phrases that follow. In other words, when motifs are repeated, we expect this pattern to continue (Huron 2006). We can see these three categories of expectation at work in the song *Blurred Lines* by Robin Thick. For example, the general *radio listening* public will have, at one time or another, heard the song *Blurred Lines*, thus episodic memory will be activated as the listener has some expectation of how the vocal melody will progress based on the gestalt principle of past experience. Semantic memory can be identified because the listener is familiar with the overall western pop style of music that *Blurred Lines* encompasses as well as the fact that this particular piece incorporates elements of another hit pop song: *Got to Give It Up* by Marvin Gaye. The listeners' short-term memory will recognise bar 26 (the beginning of the first chorus section) as being identical to bar 58 (the beginning of the second chorus section) of the piece. Thus, these expectations, once predicted favourably, will give the listener a sense of fulfilment, ultimately leading to a positive emotion and making the listener *come back for more*. With most listeners experiencing a similar occurrence by continually ‘coming back for more’ because of the composition’s catchy elements, the work will inevitably be elevated to the status of a hit song. These ideas are explored in more detail in the case studies considered in Chapter 4.

CHAPTER 3

PARAMETERS AND THE CONSTRUCTION OF MELODIC HOOKS

I have defined hooks and melodies in Chapter 2 and discussed the gestalt principles that are activated in the perception and cognition of these items. In this chapter I ask: why are hooks so important to the success of popular songs? My hypothesis is that the identity of a song's melody is an amalgam comprising all of music's parameters. For example, a pop song's melody will include pitch, rhythm, harmony, tempo, and dynamics. From composing experience, I have discovered (and it is widely known) that a pitch is a quality of sound. Rhythm alone does not suggest melody while harmony alone could suggest melody, but this typically may not be memorable. (Pitch, rhythm and harmony are discussed in detail below). Thus, I conclude that the melody is the only characteristic of music that can truly stand alone. I feel that pop songs without a catchy melody or hook would be a bit of an oxymoron. Melody is the feature all human beings can relate to. It is what you hum to yourself and it is what you remember from your favourite song. In a pop music context, the melody and the hook could very well be the same thing.

Research suggests that human beings are biologically disposed to music (Levitin 2006); however, there are elements in music cognition that are determined by experience. By being exposed to one's cultural music through childhood, one becomes accustomed to the specific musical scales (system/structures, i.e. not only pitch) that are inherent in that particular music. These psychological concepts allude to gestalt principles and are important to this study because they provide insight into pitch and rhythm perception from a psychological basis to better understand how a series of pitches (a melody) is processed in the minds of the participants of this study on a note-to-note foundation.

3.1. PITCH

"Pitch refers to the mental representation an organism has of the fundamental frequency of sound" (Levitin 2006:22). One important finding of this research regarding sound is that pitch is an entirely psychological phenomenon (Levitin 2006:69) determined from frequencies of vibrating air molecules. The most basic explanation is that sound waves possess frequency and amplitude and air molecules will vibrate at specific frequencies. The human ear understands this as the psychological phenomenon known as pitch.

Note frequencies have significant effects on perception in the way that they have direct associates in the brain. For example, research has shown that when a 440 Hz tone is heard, inside our auditory cortex neurons will fire at precisely the same frequency of this tone. Conversely, when harmonic instruments are played, each note is complemented or accompanied by multiples of that frequency known as overtones, which are also reflected in the auditory cortex's firing frequencies. The human brain is so proficient at identifying pitch that it is able to reconnect any absent or disposed fundamental note (Bye 2011), which strongly suggests concepts of gestalt theory, specifically the principle of closure.

The 'rules' regarding the pitch associated with one's culture's music explain how persons not classified as musicians (perhaps rather just music listeners) can also identify when a note is misplaced. The tension experienced by the dissonance of an off note exposes how fundamental expectation is to the principles of songwriting and music cognition when violated. For example: when a melody takes a sizable 'leap' either up or down the subsequent octaves, it is anticipated that the proceeding note will then change direction to stabilise the tension produced by the movement away from the tonic (Narmour 1990; Bye 2011). Thus, the human brain's innate ability to process pitch, overtones and interval sizes accurately has been utilised in melody and hook writing of composers throughout history and this is no different in twenty-first-century popular music composition. Composers will utilise pitch and intervals to create an expectation that will cause an emotional response in the listener of either fulfilment or violation, for example. This process conforms to gestalt theory; thus gestalt laws and principles provide an explanation for this phenomenon (see section 2.2 on gestalt theory).

3.2. RHYTHM

Another essential facet of melody is the rhythm it encompasses. Rhythm is defined by the English Oxford Living Dictionaries (2018b) as a *strong, regular repeated pattern of movement or sound*. Beats or pulses can be described as points in time presented in a perceptually periodic way (Patel 2003) and are a fundamental component of musical rhythm. The term ‘metre’, on the other hand, is a subsystem of rhythmic organisation and describes the regularly recurring patterns and accents in music. Contrary to rhythm, metre does not cardinally describe the sounds heard by the listener but rather bars and beats.

The cognition of rhythm in music should not be examined as a whole, but rather in terms of grouping, beat, metre, and tempo, as the brain allocates distinctive associations to grouping and metrical hierarchy. Human brains are proficient at recognising structural properties within musical works and decipher them in various contexts. ‘Grouping’ signifies the association of the musical stream into motives, phrases, and sections. ‘Metre’ communicates a systematic pattern of strong and weak beats. Additionally, the notion of the speed of the presented musical pattern is the ‘tempo’ and it is this that affects our understanding and awareness of rhythmic structures (Ravignani, Gingras, Asano, Sonnweber, Matellan, & Tecumseh Fitch, 2013). Tempo, however, is not distinctive to music. Tempo is profoundly entrenched into human biological means of time-keeping such as your heartbeat or sleep cycle (Bye 2011).

3.3. CONSTRUCTION OF MELODY AND HOOKS

From a practical point of view, while constructing catchy sections for an original pop song, the hook must be defined again: this is a small unit of music that embodies enough of a shape and rhythm to be identifiable when separated from other compositional elements such as harmony and metre. A hook realises its distinctiveness via repetition; it is frequently used as the primary building block for [pop] music compositions (Perricone 2000:73). White (1976) defines a hook as a brief musical idea, a salient repetitive figure, musical section or series of notes that is of significance or a quality of the composition.

Through hit pop song analysis as well as the composition of an original work I attempted to identify patterns in melody giving rise to the ‘catchiness’ of hooks in order to recognise certain areas of cognition that can assist in answering the question ‘what makes a song catchy?’ For the construction of an original work, I accept that melody is essentially pitch and rhythm and the melodic phrase is the complete musical statement coming to some point of resolution rhythmically or tonally. Songwriters have often considered repetition as the most important factor in making a melody memorable; however, repetition without variation causes monotony and excessive variation will cause incoherence. These compositional concepts will be addressed further in Chapter 5.

Constructing a completely original melody comprising elements of catchiness that will ultimately be experienced as the hook of a pop song, while also conforming to gestalt principles, presented some challenges. In the work *Tip Toe* by Lacey May, the hook was constructed as the initial step in creating the composition and the rest of the piece, i.e. verse melody and bridge melody were constructed later. The main hook is as follows:

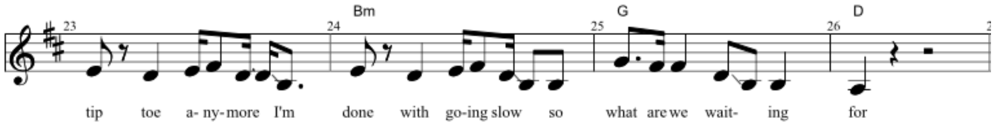

23
24
Bm
25
G
26
D
tip toe a- ny- more I'm done with go-ing slow so what are we wait- ing for

Figure 3.2: Hook Construction - *Tip Toe* - Lacey May

The interaction between the melody, hook and the chords was carefully considered as the triads used (Bm, G, D) encompass notes of which the melody was built at various intervals of the hook. For example, in bar 2 the melody notes conform to a b minor triad. The significance of this was for the notes of the melody not to deviate too far from the chosen chords, aiding the melody to be ‘pulled along’ with the accompanying chord progression in a purposeful, logical fashion.

The starting note of the hook does not begin on the tonic (D), it begins on the 2nd degree of the scale (E) to imply the Dorian mode. This creates a sense of expectation. The tonic note (D) is presented three times through the three-bar hook;

however, the phrase does not resolve to the tonic. This creates a violation of expectation and heightens tension by moving to the dominant 5th, a somewhat stable resolution but not as stable as the tonic. We considered this a ‘safe choice’ for pop-song writing because the hook is left unresolved on a closely related chord tone. The principle of closure was considered when deciding upon the note for resolution of the hook (A) as we wanted the mind to ‘fill the gap’ and the phrase to feel resolved and the expectation to be fulfilled. The first two bars of this hook present identical pitch and rhythm and the last bar presents a slightly different rhythm with similar notes. This invokes the gestalt principle of similarity. Repetition (tonally and rhythmically) is an important feature of hook writing. To keep the hook interesting, non-chord tones were used but few chromatic notes. Thus, a delicate balance of fulfilment and denied expectation, repetition and variation was attempted to maintain the listener’s attention, ultimately creating a memorable melody known as the hook.

CHAPTER 4
MELODIC ANALYSIS

John Locke (1632–1704) and Ernst Mach (1838–1916) were some of the first to advocate the notion of the 'whole' as an 'absolute idea' and that this idea could be directly applied to melody. Christian von Ehrenfels (1859–1932) reformed the argument by determining what such forms 'are in themselves'. Mach hypothesised that even when no notes are the same, one can identify melodies as being identical, while Ehrenfels recognised evidence of gestalt where the structure is distinctive from the sum of the parts (Von Ehrenfels, 1890). The expansion of gestalt psychology began with Max Wertheimer (1880–1943), Kurt Koffka (1886–1941) and Wolfgang Köhler (1887–1967). These gestalt psychologists did not construct the study of the 'whole' and its parts. Wertheimer transformed Georg Müller's (1850–1934) suggestion that an impulse defined by elements of proximity or equal positioning proposes stronger continuity and falls into the gestalt principles of good continuation, proximity, similarity, closure, and *Prägnanz* (Gjerdingen 1999).

The melodic analysis below draws on these concepts of gestalt theory applied to music, but more specifically, melody. Gestalt theory in general terms focuses on the 'whole' within perception, not as a collection of observations of its separate parts, but rather something larger. In the case of the melodic analysis below, the 'whole' is the entire piece itself that includes all elements that contribute to the experience of the composition (see Appendix A). Human perceptions are said to be subconsciously constructing a perception as constant as possible. Consequently, the conscious mind is filled with this organised understanding of the 'whole'. The notion of gestalt theory applied to music was therefore practically useful in this study to analyse hooks in vocal pop music. This is because of our innate ability to psychologically process a collection of sounds in a unique way. For example: we can hear a succession of notes and organise these as individual perceptual components, which will be as "good as the prevailing conditions allow" (Meyer 1956:91). Supposing that we can successfully accomplish this, the succession of notes will become consequential in perception, and ultimately recognised as a ‘tune’. Our mind’s predisposition to separate individual components within melody into a kind of ‘whole’ is one of the core principles of gestalt psychology and conforms to the type of note-to-note analysis achieved in this study.

The elements that contribute to the piece of music need to be isolated and then analysed to understand the ‘whole’. Isolating musical elements that contribute to the piece is relatively standard throughout western music; however, experts may argue about the precise definitions of these parameters. The parameter can be defined as any component that can be composed independently from other components within the piece of music. Meyer expresses musical parameters as: rhythm, timbre, and harmony (Meyer 1973:9), while to Narmour they are melody, harmony, rhythm, dynamics, tessitura, timbre, tempo, metre, and texture (Narmour 2015:32). The above parameters discussed by Meyer and Narmour – while important to consider, as this is how music is experienced as a whole – are not discussed in detail in this study as the primary focus here is melody, more specifically vocal melody. However, these parameters are represented in the full transcriptions in Appendix A of this study.

For this study it was appropriate to consider Merriam’s (1964) proposed theoretical research model that adopts the three elements that are always present in the musical activity: concept, behaviour and sound (Merriam 1964:32-33), as an added part of the notion of musical gestalt and the concept of the ‘whole’. From this, Thomson (1957) provides a list of musical ‘raw materials’ that give insight into the order of the parameters’ supposed discovery, namely rhythm, melody and harmony. As a result, the core elements proposed by Meyer and Thomson were analysed for this study, with additional deliberations given to the parameters suggested by Narmour.

Sound perception was a secondary consideration in the analysis. Within the field of music cognition and analysis, the study of melodic expectation considers the engagement of the brain's predictive mechanisms in response to music (Margulis, 2007), thus musical elements need to be identified to explore melodic expectations. Sound perception is categorised into six perceptive practices: pitch, duration, loudness, timbre, sonic texture, and spatial location (Burton 2015:22-28) for cognitive analysis to take place. Exploring the cognitive processes as well as the musical parameters provides further insight into the construction of catchiness in pop music and improves the understanding of gestalt principles applied to pop songs.

The melodic analysis used the theories of Eugene Narmour (1992). Narmour developed the I-R model (discussed in Chapters 1 and 2) of musical expectation as an alternative to Schenkerian analysis, concentrating less on music analysis and more on the cognitive characteristics of expectation in music. However, both Meyer and Narmour are opposed to this reductionist approach in music theory. A critical question arises: can music analysis, and more specifically pop melody analysis, be justified and conform to gestalt principles? To a degree, both Meyer and Narmour consider this hypothesis. However, they differ in the way that Narmour defines 'cultural' top-down processing while Meyer suggests 'natural' bottom-up processing.

For example: Narmour's primary critique of Meyer's philosophy is that Meyer defines pattern holistically as the interaction of the three key pattern forming parameters of duration, pitch, and harmony. In contrast, Narmour distinguishes true significance to pitch only, in terms of interval and register, and regards rhythm and harmony as parameters that interact with pitch patterns from above, as top-down elements of style, as discussed in Chapter 2.

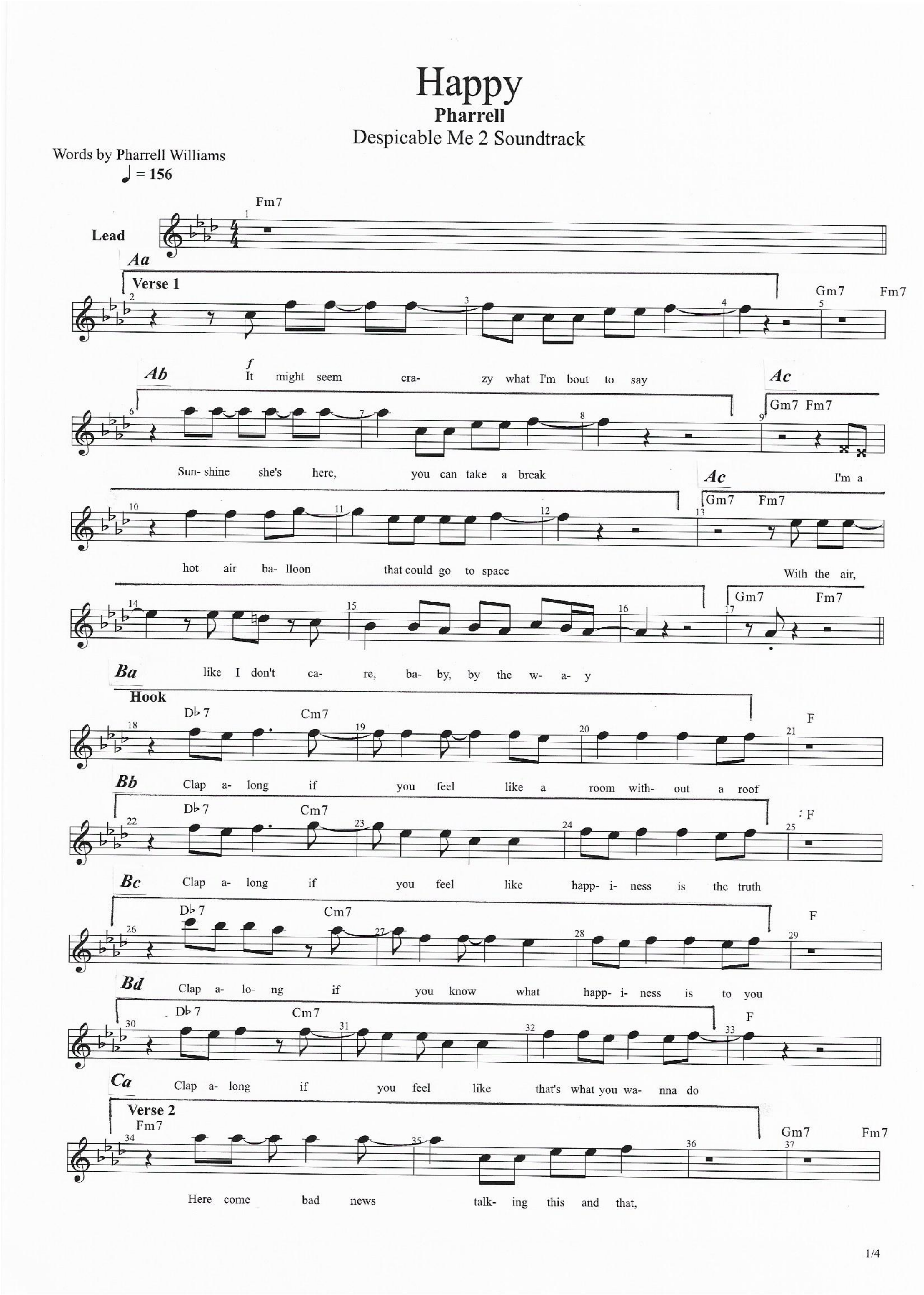
4.1. ANALYSIS METHOD

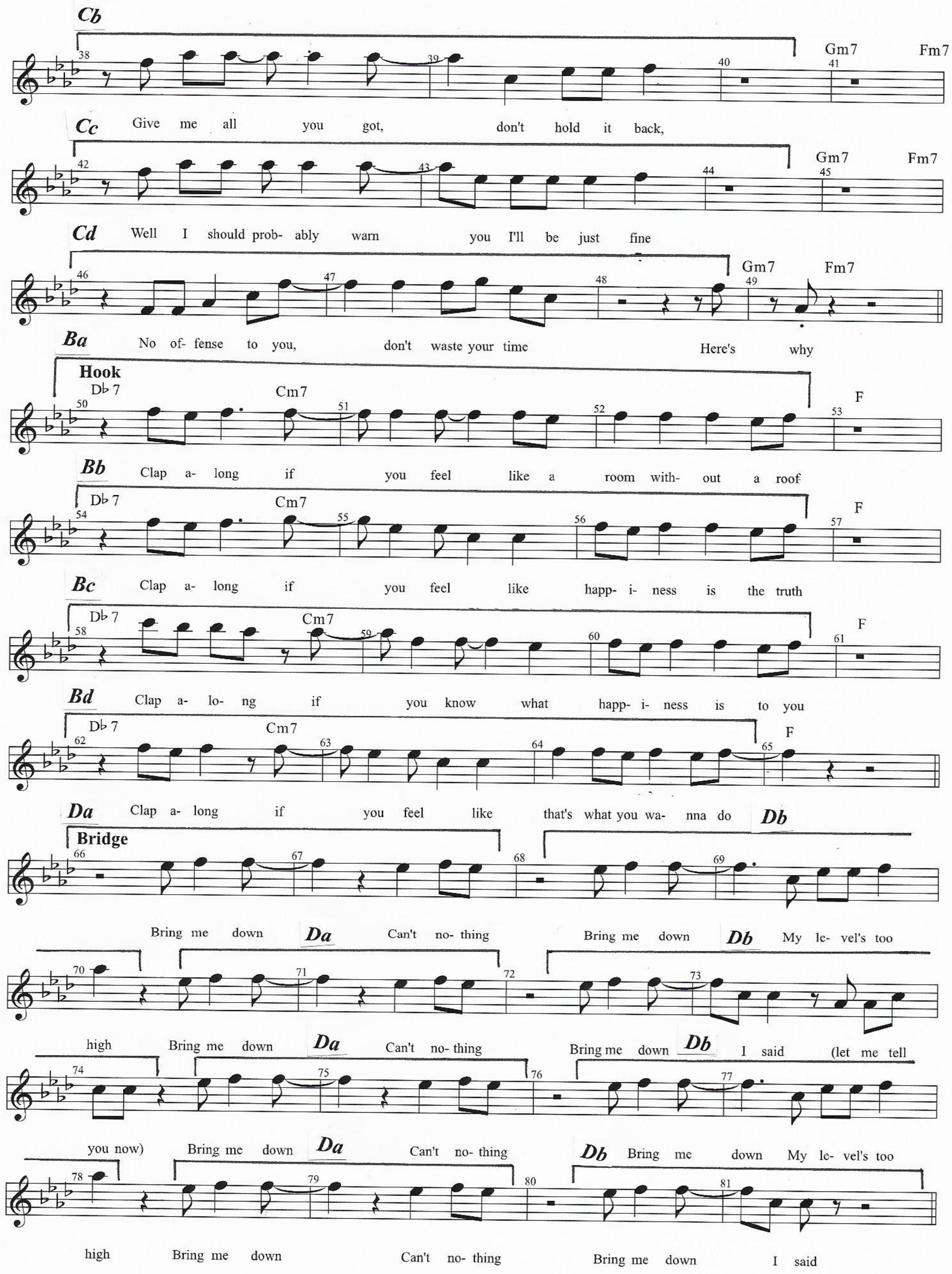
In this analysis I combine gestalt theory with the concepts of the implication-realization model, as the I-R model uses gestalt concepts. This demonstrates gestalt shifts and reveals that catchiness in the hooks of vocal melodies of twenty-first-century pop music are linked to the psychological phenomenon of expectation.

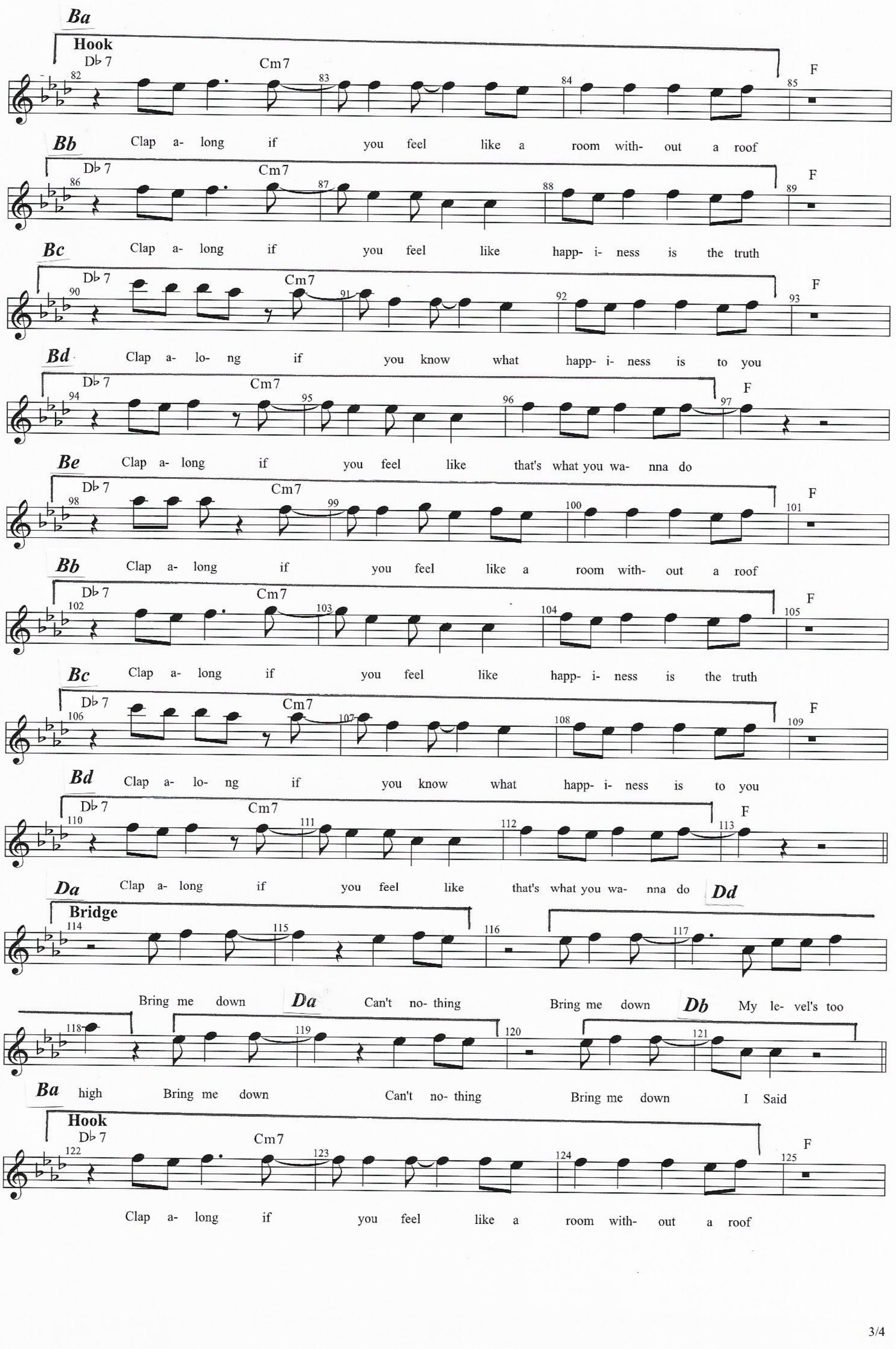
Below we see how individual phrases fit together, how listeners experience these phrases and how 'hooks' conform to gestalt principles. Hooks in pop music appeal to the listener, they are memorable, and generate expectations linked to gestalt principles to which they correspond or from which they depart.

The analysis begins with full transcriptions of each pop song (Appendix A), with each prominent musical section transcribed. The vocal melody is the main focus of this analysis. I have also included pitch class reductions in two transcriptions that demonstrate pitch movement, leaving out repetitions of the same pitch class. This shows the range of notes used in the vocal melody. Bar lines have been removed and a minim has been used to represent each pitch class. Bar lines are inserted to establish the end point of each section. Pitch classes an octave apart have not been omitted in the reductions. Each section of the piece has been labelled to show the basic formal structure. For example: verse 1 is labelled the *A* section, the chorus labelled *B* section, and so on. Within each section (*A, B,* etc.), the melodic vocal phrases have been divided into sub-sections and labelled *Aa* and *Ab* in the first and second bar of verse 1 and *Ba* and *Bb* in the first two bars of the chorus section, for example. This method of labelling describes variants across the phrases. Melodic vocal phrases that share the same tones and rhythm are labelled as identical and those that differ in notes and rhythm are given alternate labels to establish similarities and patterns within each section and sub- section of the piece.

4.2. *HAPPY* (2013) BY PHARRELL WILLIAMS


Happy
Pharrell
Despicable Me 2 Soundtrack
Words by Pharrell Williams
♩ = 156
Fm7
Lead
Aa
Verse 1
Gm7 Fm7
f
It might seem cra- zy what I'm bout to say
Ab
Ac
Gm7 Fm7
Sun- shine she's here, you can take a break
Ac
I'm a
Gm7 Fm7
hot air ba- lloon that could go to space
With the air,
Gm7 Fm7
like I don't ca- re, ba- by, by the w- a- y
Ba
Hook
D♭7 Cm7 F
Clap a- long if you feel like a room with- out a roof
Bb
D♭7 Cm7 F
Clap a- long if you feel like happ- i- ness is the truth
Bc
D♭7 Cm7 F
Clap a- lo- ng if you know what happ- i- ness is to you
Bd
D♭7 Cm7 F
Clap a- long if you feel like that's what you wa- nna do
Ca
Verse 2
Fm7
Gm7 Fm7
Here come bad news talk- ing this and that,
1/4


Cb
Gm7 Fm7
Give me all you got, don't hold it back,
Cc
Gm7 Fm7
Well I should prob- ably warn you I'll be just fine
Cd
Gm7 Fm7
No of- fense to you, don't waste your time Here's why
Ba
Hook
D♭7 Cm7 F
Clap a- long if you feel like a room with- out a roof
Bb
D♭7 Cm7 F
Clap a- long if you feel like happ- i- ness is the truth
Bc
D♭7 Cm7 F
Clap a- lo- ng if you know what happ- i- ness is to you
Bd
D♭7 Cm7 F
Clap a- long if you feel like that's what you wa- nna do
Da
Bridge
Db
Bring me down
Da
Can't no- thing
Bring me down
Db
My le- vel's too high
Bring me down
Da
Can't no- thing
Bring me down
Db
I said (let me tell you now)
Bring me down
Da
Can't no- thing
Db
Bring me down
My le- vel's too high
Bring me down
Can't no- thing
Bring me down
I said


Ba
Hook
D♭7
Cm7
F
Clap a- long if you feel like a room with- out a roof
Bb
Clap a- long if you feel like happ- i- ness is the truth
Bc
Clap a- lo- ng if you know what happ- i- ness is to you
Bd
Clap a- long if you feel like that's what you wa- nna do
Be
Clap a- long if you feel like a room with- out a roof
Bb
Clap a- long if you feel like happ- i- ness is the truth
Bc
Clap a- lo- ng if you know what happ- i- ness is to you
Bd
Clap a- long if you feel like that's what you wa- nna do
Da
Bridge
Dd
Bring me down
Da
Can't no- thing
Bring me down
Db
My le- vel's too
high
Bring me down
Can't no- thing
Bring me down
I Said
Ba
Hook
Clap a- long if you feel like a room with- out a roof
3/4

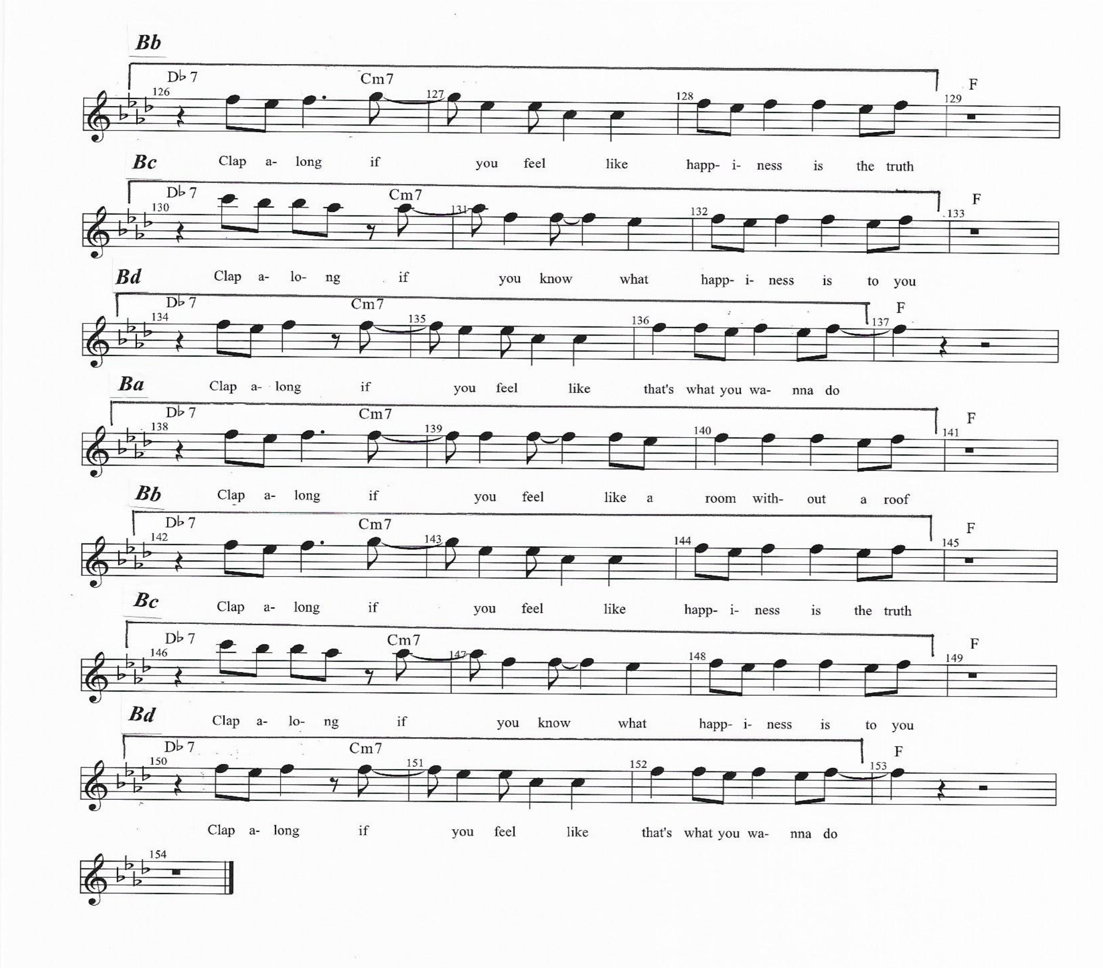

Bb
D♭7
Cm7
F
Clap a- long if you feel like happ- i- ness is the truth
Bc
Clap a- lo- ng if you know what happ- i- ness is to you
Bd
Clap a- long if you feel like that's what you wa- nna do
Ba
Clap a- long if you feel like a room with- out a roof
Bb
Clap a- long if you feel like happ- i- ness is the truth
Bc
Clap a- lo- ng if you know what happ- i- ness is to you
Bd
Clap a- long if you feel like that's what you wa- nna do

Figure 4.1: *Happy* (2013) by Pharrell Williams

The full transcription of *Happy* is included in Appendix A, and includes: the lead vocal melody, three backing vocal melody sections, drums and piano. The song's tempo is a quick 156 beats per minute. The key is not firmly established at the outset, and strong cadences are avoided. F major seems at first to be the tonic, although there is frequent reference to f minor. The recurrence of the E*b* in the vocal melody is used more frequently than the leading tone E natural. This adds somewhat to the sense of ambiguity in the tonality of the piece, although the use of minor sevenths is common in most popular music.

Figure 4.1.1 illustrates a pitch class reduction of *Happy* (notated in the order in which they appear). The song sections include: verse 1, chorus (hook), verse 2, and bridge section. The 'main notes' of the entire song have been included as a summary. This shows the range of the melody and its basic tonal elements, but to understand how tension is built and used to generate interest, the analysis investigates the details of individual tones and their patterning in sequence.

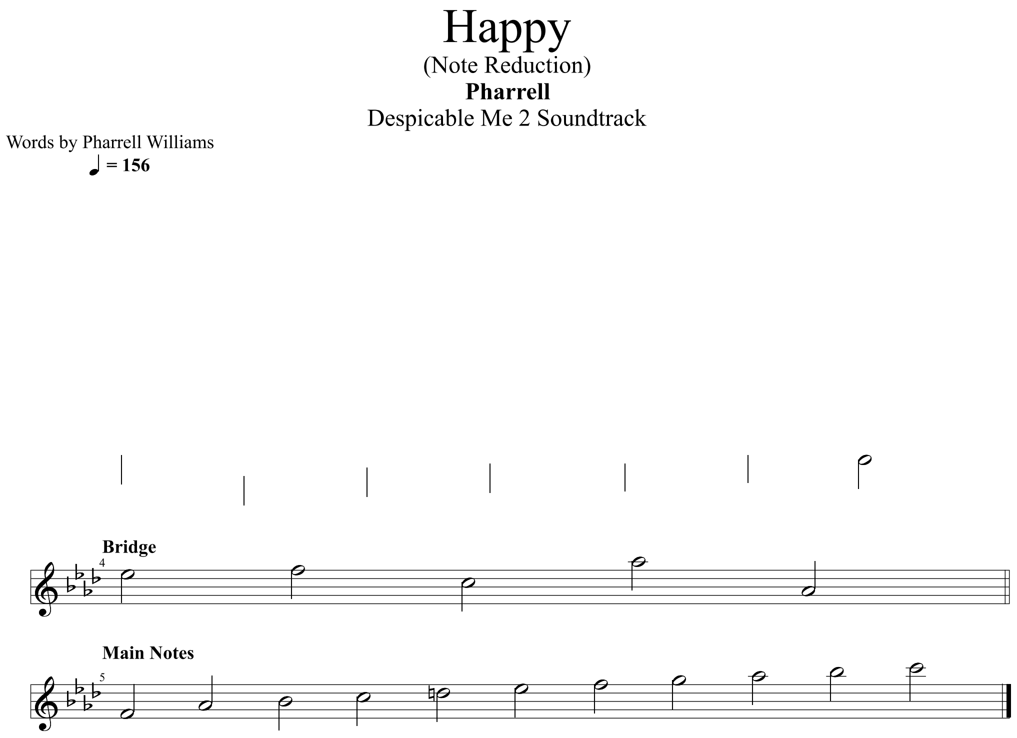

Happy
(Note Reduction)
Pharrell
Despicable Me 2 Soundtrack
Words by Pharrell Williams
♩ = 156
Bridge
4
Main Notes
5

Figure 4.1.1: Pitch Class Reduction for *Happy* by Pharrell Williams

Form Analysis

Establishing the key of *Happy* was achieved by using a broad framework of F minor. The first component to consider is the constant use of the E*b* (the flattened 7th). This could be seen as a traditional melodic minor scale with the 7th being raised in the ascending direction and flattened in the descending direction; however, in this case there is a consistent use of the flattened 7th regardless of direction, for example bar 3 (*Aa*).

In the first phrase of *Happy* the tonic can be established from the C and the E*b* (5th and 7th in F minor) with the F note ending each phrase. The A is continually flattened, thus establishing the piece to be in a minor key. The dominant minor (C E*b* G) recurs.

The use of the D natural in bar 14 suggests that this song may have been composed on guitar using barre chords with harmonic shifts. The D natural is the dominant of G minor (ii of F), because the composer of the piece might be working harmonically from the barre chords; the function of the D natural is V of ii. This is what happens when playing G minor 7 barre chord on a guitar.

A Section (verse 1)

Each phrase in the *A* section (verse 1) displays a similar rhythmic pattern; however, the notes differ slightly, each 3-4 bar phrase is labelled separately (as above 4.1). For example: bars 2–4: *Aa*, bars 6–8: *Ab*, bars 9–12: *Ac* and bars 13–16: *Ad*.

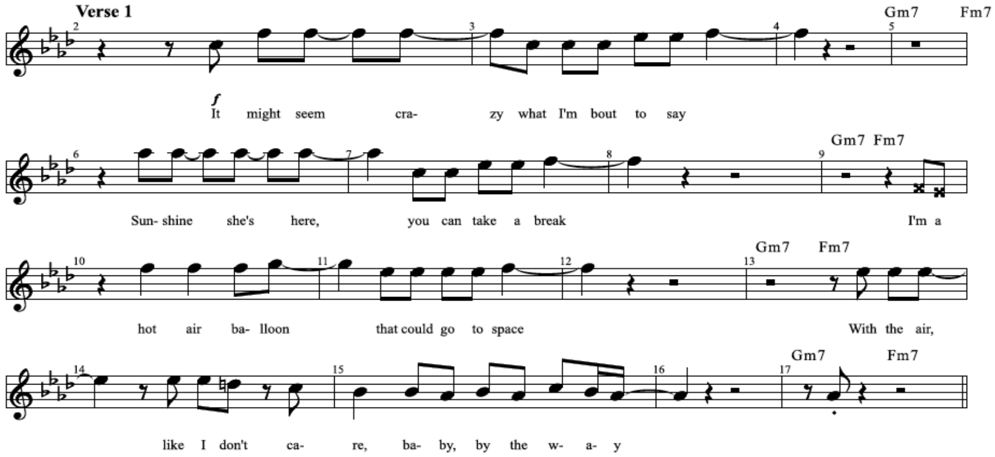

Verse 1
Gm7 Fm7
It might seem cra- zy what I'm bout to say
Gm7 Fm7
Sun- shine she's here, you can take a break
I'm a
Gm7 Fm7
hot air ba- lloon that could go to space
With the air,
Gm7 Fm7
like I don't ca- re, ba- by, by the w- a- y

Figure 4.1.2: *A* Section (verse 1)

All four phrases in the *A* section (*Aa, Ab, Ac, Ad*) have the E*b* note in common. The 7th degree of the scale is the flattened 7th of the F minor scale. The repetition of the E*b* in the vocal melody here will cause the listener to experience incompleteness, or a sense that the harmony is ‘floating’. This creates a sense of anticipation for the tonic note F with each phrase incorporating a major 2nd interval. David Huron (2006) defines anticipation as “the positive feelings that arise from conscious thought about some future event” (Huron 2006:158). Huron emphasises music’s psychological ability to evoke pleasure within human beings, and experiencing the anticipation as it appears in *Happy* reiterates the ‘positive feelings’ he defines, not only by the constant anticipation of the F note but also by the lyrical content and momentum in the production of the song.

Huron (2006) takes an evolutionary approach when discussing anticipation in music, suggesting that anticipating forthcoming occurrences will escalate the possibility of a human being's ability to survive. If a person accurately predicted the occurrence, the event would be perceived, processed and responded to more proficiently but also because positive prediction of consequences permits us to carry out actions with the most favourable result. This theory can be seen, and more importantly, experienced, by Pharrell Williams' composition denying our expectation of the note F and presenting the listener with the E*b*, not allowing a successful predication of events. Thus, the listener is not able to psychologically respond as quickly as if the prediction was accurate, and maintaining the listener's interest for a longer period of time to experience pleasure when each phrase finally presents the listener with the tonic note.

In the *A* section we can recognise one of Narmour's predispositions presented in the I-R model, namely intervallic difference. For example: in bars 2-4 *(Aa)* the concept of intervallic difference can be seen where the small implicative intervals imply similarly sized realised intervals. In bars 6-8 *Ab* we can see the predisposition of registral direction where we have a leap (minor 6 interval) in bar 7, clearly indicating a change in registral direction in line with the core theory of the I-R model.

B Section (hook / chorus)

In the case of *Happy* the notes in the lead vocal melody of the chorus cannot stand alone without the backing vocals since these are an integral part of the chorus section. This is important to note, as Nunes and Ordanini (2014) have shown the importance of backing vocals in hit pop songs. The backing vocals start each phrase in the chorus with the lead vocal melody picking up in the next bar, for example bar 17 and bar 18. However, for the sake of this analysis the two backing vocal notes F and E*b* will not be presented in Figure 4.1.3 because the lead vocal melody is the focus of this study. The chorus phrases are three bars each and the third bar in every chorus phrase is very similar in pitch and rhythm. The labelling for the chorus is as follows: bars 18–20: *Ba*, bars 22–24: *Bb*, bars 26–28: *Bc* and bars 30–32: *Bd*.

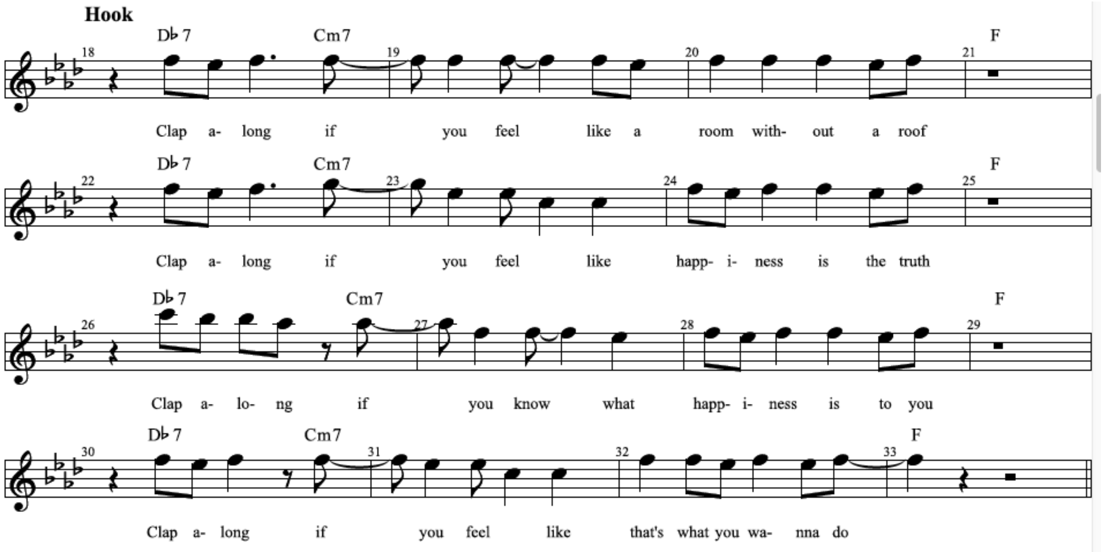

Hook
Db7
Cm7
F
Clap a- long if you feel like a room with- out a roof
Clap a- long if you feel like happ- i- ness is the truth
Clap a- lo- ng if you know what happ- i- ness is to you
Clap a- long if you feel like that's what you wa- nna do

Figure 4.1.3: *B* Section (hook / chorus)

All four phrases in the *B* section (*Ba, Bb, Bc, Bd*) are similar to the *A* section in the way they comprise an E*b*, with an additional common note being F. These are the same two notes used by the backing vocals at the beginning of each phrase (compared with bars 17, 21, 25, 29). The range of notes in the *B* section – like the *A* section – is again very limited, with no interval being larger than a perfect 4th. Bars 20, 24, 28, 32 (the last bars of each respective phrase) are extremely similar in that the E*b* and F are repeated with only a slight difference in order of notes and rhythm. But they are not similar enough to be categorised and labelled separately (for example as *Be*). However, in bars 98–100 of the chorus, the melody changes slightly and is labelled *Be*, where it would have been *Ba.* The intervals present in the *B* section are major 2nd, minor 3rd and perfect 4th, and this is significant because the interval types are playing with our emotions in an ambiguous way. For example, a major 2nd interval will generally convey feelings of brightness and strength, while in contrast the minor 3rd will express sadness or even a feeling of tragedy. The perfect 4th interval gives the listener a feeling of lightness and openness, which again speaks to the positive mood and joyful lyrical content of the song. On this basis, these generalisations about intervals come from personal experience in composition and consulting with various classically trained composers.

In the *B* section of this work, Narmour's I-R principle of proximity can be seen throughout the chorus; that is, small realised intervals (5 semitones or less) are more implied than large intervals and that will mean the implications are stronger, e.g. the chorus section consists of mainly major 2nd intervals, major and minor 3rd intervals as well as a perfect 4th, all five semitones or less.

C Section (verse 2)

Each phrase in the *C* section (verse 2) displays a similar rhythmic pattern to the *A* section. However, the notes differ slightly in each three to four-bar phrase and have been labelled separately. For example: bars 34–36: *Ca*, bars 38–40: *Cb*, bars 42–44: *Cc* and bars 46–48: *Cd*.

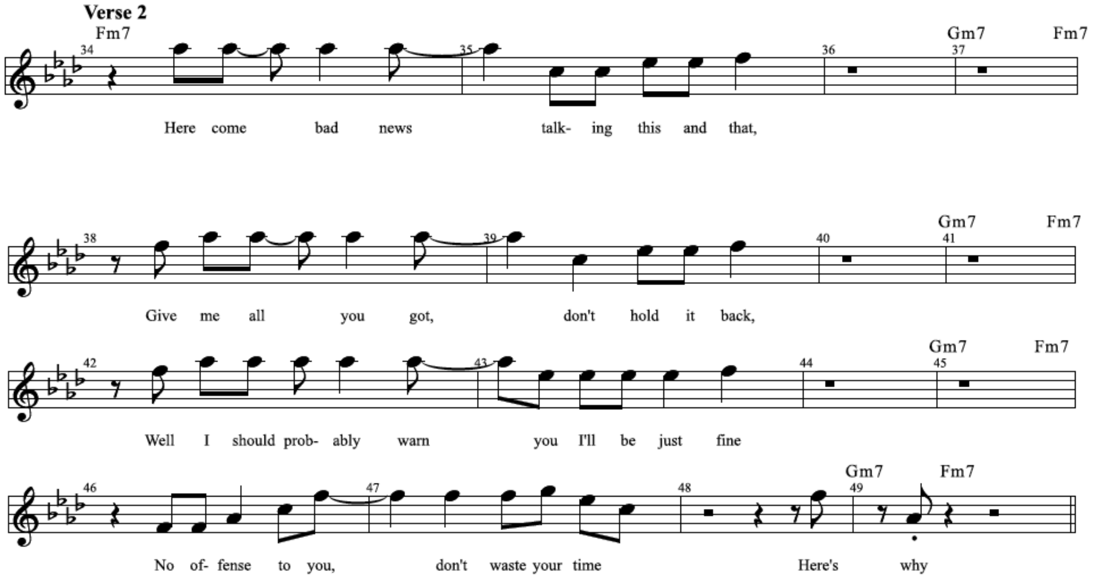

Verse 2
Fm7
34
Here come bad news
35
talk- ing this and that,
36
Gm7
37
Fm7
38
Give me all you got,
39
don't hold it back,
40
Gm7
41
Fm7
42
Well I should prob- ably warn
43
you I'll be just fine
44
Gm7
45
Fm7
46
No of- fense to you,
47
don't waste your time
48
Here's
Gm7
49
Fm7
why

Figure 4.1.4*: C* Section (verse 2)

All four phrases in the *C* section (*Ca, Cb, Cc, Cd*) have the A*b*, E*b*, C and F notes in common. There are more common notes per phrase in the *C* section than in the *A* section. The first interval in each phrase is a minor interval, which reinforces a feeling of anticipation. Subjectively, the song has a feeling of momentum, tension and various intensity levels that are kept in an enhanced state to complement the ‘feel-good’ atmosphere of the song with elements of variation to keep the listener interested.

D section (bridge) – has no chords; however, the melody is as follows:

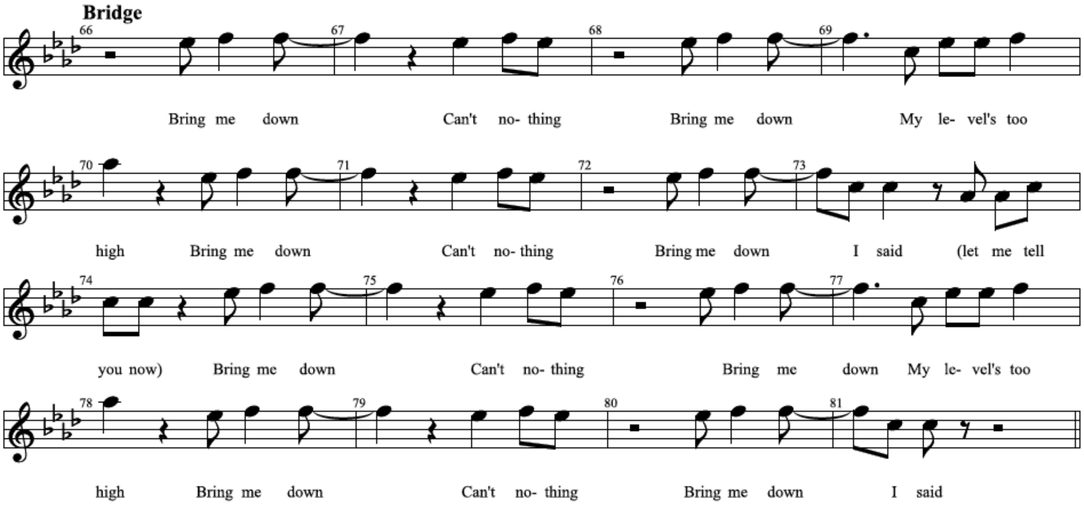

Bridge
66
67
68
69
Bring me down Can't no- thing Bring me down My le- vel's too
70
71
72
73
high Bring me down Can't no- thing Bring me down I said (let me tell
74
75
76
77
you now) Bring me down Can't no- thing Bring me down My le- vel's too
78
79
80
81
high Bring me down Can't no- thing Bring me down I said

Figure 4.1.5: *D* section (bridge)

The two phrases of the *D* section are labelled as *Da* and *Db* and have the same three intervals in common, major 2nd, minor 3rd and minor 6th. This section is highly repetitive, with very little variation in the vocal melody. The use of the minor 6th interval is significant because it appears briefly in the *A* section, more frequently in the *C* section, and not at all in the *B* section. The effect of the minor 6th interval is to evoke a feeling of pathos or sadness in contrast to the uplifting ambiance of the song. By nature, the bridge section in modern pop songs functions as a change from the verse and chorus sections and is used to establish a strong ending of the piece. It diverts the listener on a brief course, and in *Happy* it has been done texturally. In other words, the guitar or piano has established the harmonies throughout the piece and in the *D* section the harmony has been omitted. The rhythms have been enhanced by all other instrumentation falling away and the listener’s focus is now on the steady back beat of the song.

Harmonic Analysis (implications from melody)

The chords in the *A* and *C* sections (verses 1 and 2) of *Happy* are Fm7 and Gm7 and the notes of the lead vocal melody: C, F, E*b*, A*b*, G, D natural, make up the chords, with F being the common note as well as seemingly being the tonic. The chords in the *B* section (Hook/Chorus) are Gm7, Fm7, D*b*7, Cm7, F and the notes of the vocal melody are: A*b*, F, E*b*, G, C, B*b*. The chords share the notes of the vocal melody except for the D natural, which appears in the Gm7 chord, and the A natural, appearing in the F chord. The temporary switch of key from minor to major in the *A* and *C* sections to the *B* section subverts the listener's expectations. This happens because the 3rd is raised in the *B* section for the effect of the sound resolution and satisfies the listener's expectation with full closure.

If the song had begun in F major, the listener could already establish that the piece sounds happy because of the nature of a major key, thus satisfying the listener's expectations from the first bar. What is interesting and effective is the way in which the *A* section begins in F minor only later to reveal the F major in the *B* section. This change serves the purpose of a broad colour difference between the two sections that is used for dramatic effect. The impact of the *B* section is heightened, and the feeling of happiness is reinforced from a tonal as well as a lyrical perspective.

The D*b* chord in the chorus builds up to F major, and the D*b* 7 is a Neapolitan of the dominant minor as the E*b* is maintained throughout the chorus. The hook in the *B* section and the entire *D* section invites active participation in the form of clapping as part of the production of the song as well as the lyrical context. Rhythm is the unifying factor here. *Happy* displays a strong rhythmic and anticipatory characteristic that continually denies the listener's expectations from a melodic point of view.

Musical expectancy plays a distinct role in the development of emotional and affective responses (Meyer 1956). According to Meyer, emotion and affect are heightened when a listener's musical expectations are unfulfilled. A classic instance of this is the shift from minor to major in the *A* and *B* sections of *Happy*. Throughout the *A*, *B* and *C* sections of *Happy* the vocal melody does not fulfil our expectations until the last note of every melodic phrase, in most cases, where it reverts to the tonic. These 'long' phrases give a feeling of tension and interest before resolution is effected. This compositional strategy conforms to the gestalt principle of closure.

The gestalt principles of similarity and proximity are applied to the analysis of *Happy* as it seems that this song does comply with these laws of understanding perception, thus bringing us closer to establishing what makes this pop song catchy.

Similarity applies to melody as the different types of instruments playing together, as the mind tends to form links between pitches of similar timbre. For example, we will hear the lead vocal melody in *Happy* as a completed and separate part of the song to that of the piano section. As a result, when the different instruments play together in *Happy* they form groupings in our perception based on their timbres even when their pitch ranges overlap.

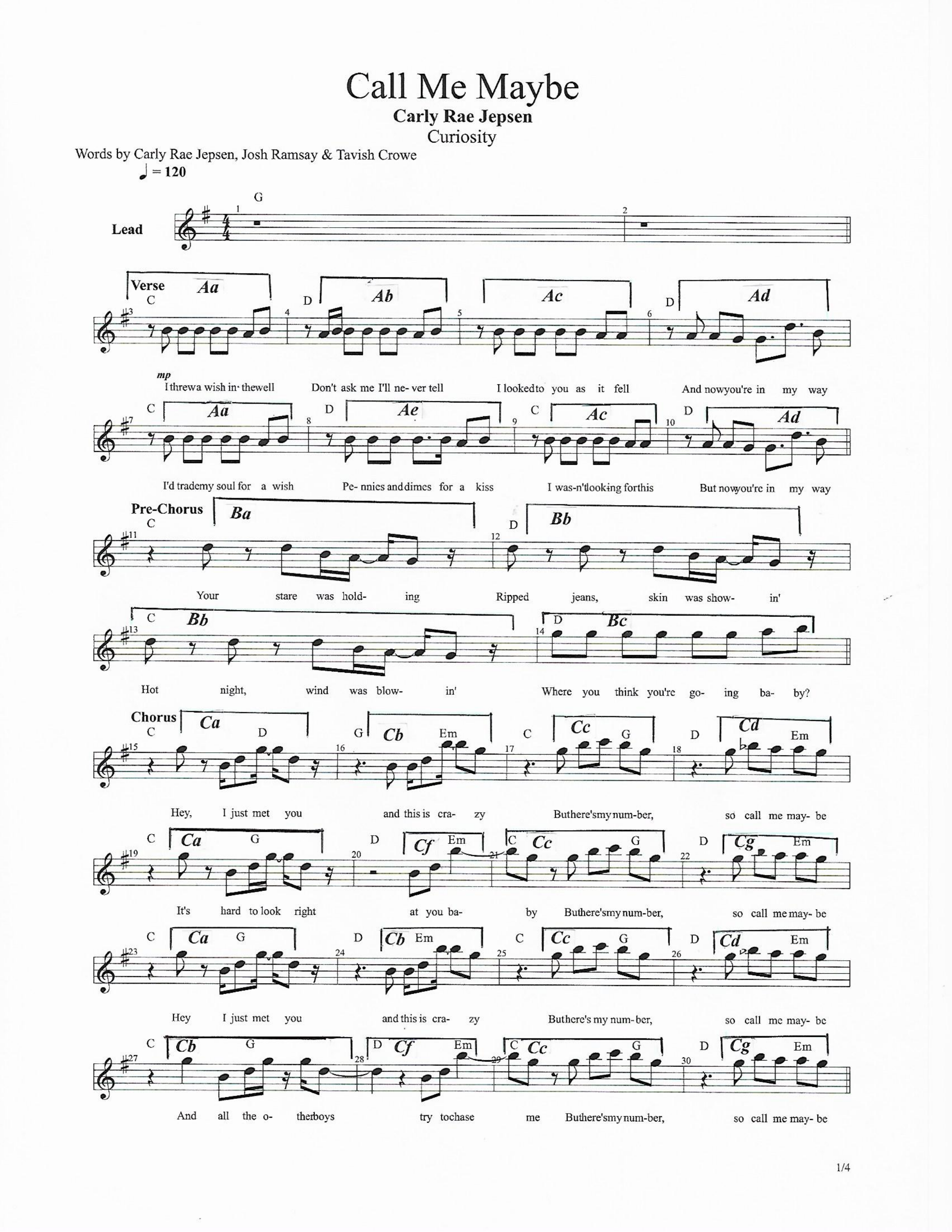
Proximity implies that we are able to create a sequence link with notes that are close together in pitch. As we hear similar notes in the vocal melody unfolding, the mind will group these together into one phrase. In the case of *Happy*, each phrase can be heard as separate but still part of the larger section. For example: the *B* section of the song has four similar vocal melodies broken down into subsections *Ba, Bb, Bc, Bd*. These melodies are similar in pitch and rhythm yet different enough to warrant alternative labelling.

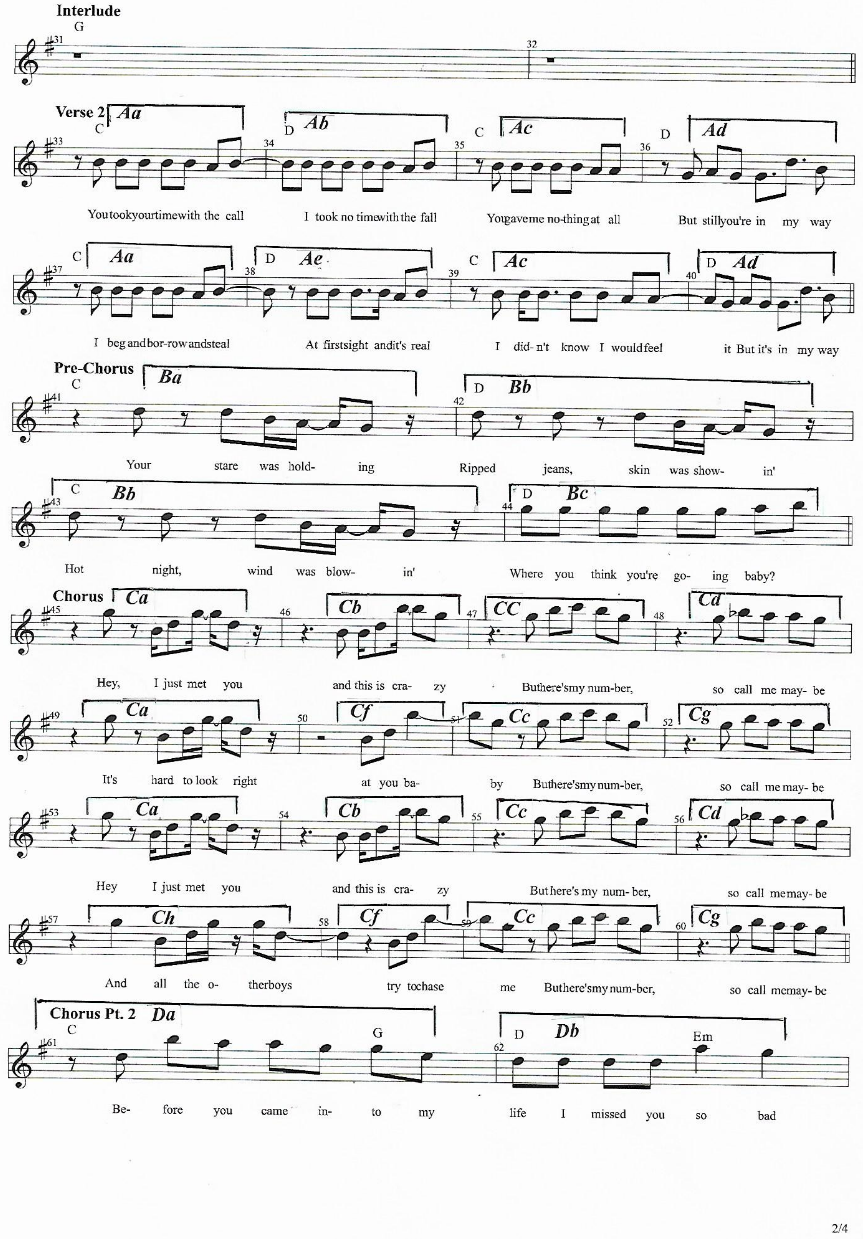
Summary and Conclusions

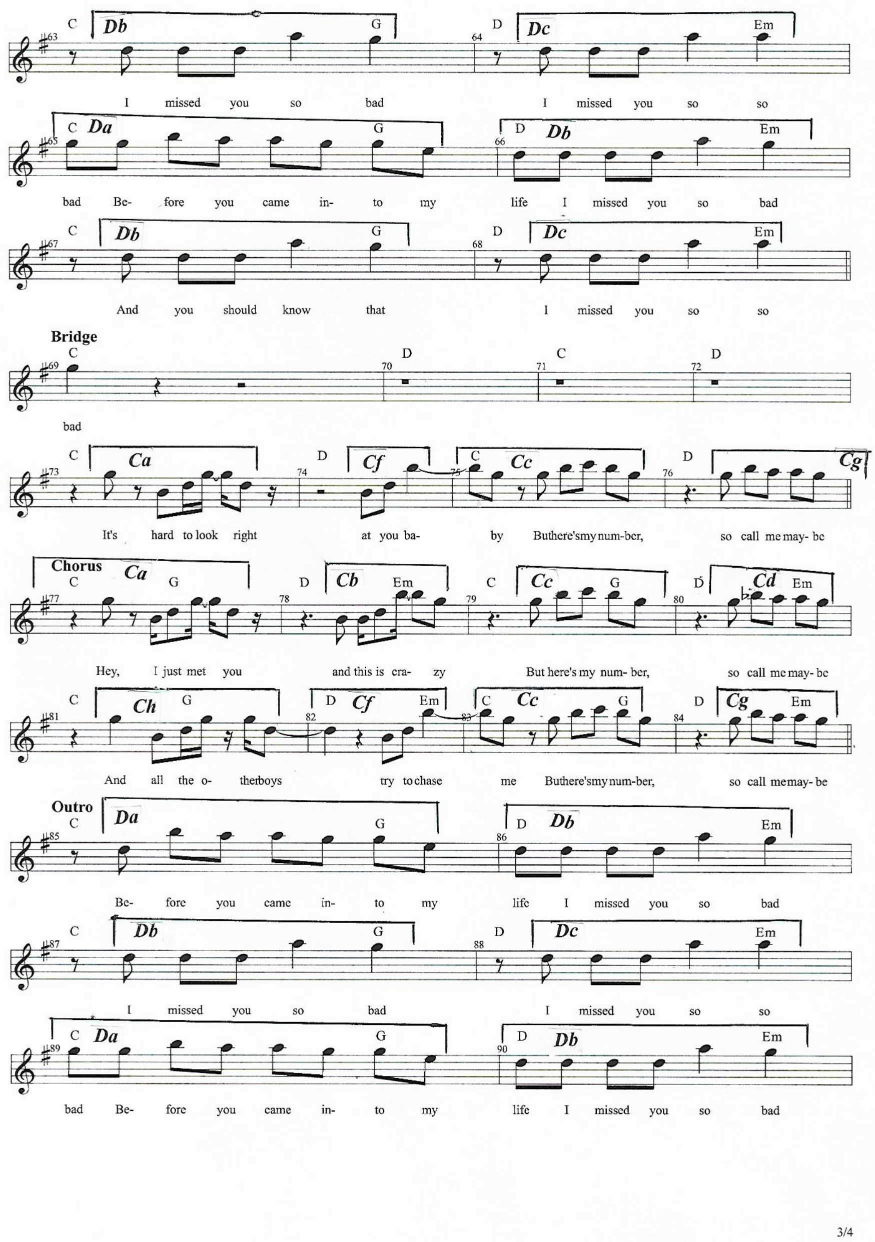
Happy conforms to the gestalt principles of similarity, proximity, and closure and the listeners' expectations are fulfilled or unfulfilled in certain phrases. When these expectations are violated, the composer is playing on the listener's emotion and expectation in order to keep a seemingly simple and limited pitch range in the vocal melody interesting. This seems to indicate that there is a link between expectancy and catchiness. This serves as evidence strengthening the argument that musical hooks always have an element of expectancy to them, although there is perhaps more to catchiness than just expectancy. Therefore, expectancy is a necessary, but not sufficient, condition for catchiness. Principles of Narmour's I-R model apply to the vocal melodies of this work; namely intervallic difference, registral direction and proximity, thus suggesting melodic perception and cognition can be based on the theory that a listener will form expectations about how a melody will continue.

The nature of the lyrical content in *Happy* can be described as 'instructional' as the *B* section specifically invites the listener to clap along. The song is very repetitive, and this captures the motor circuitry of the brain, which gives the listener a sense the music 'pulling you along' This playful use of pitch class repetition and resolution encourages the listener to feel happy (Margulis 2007). The repetition also creates expectation of its own and this continually renews our interest in the song.

4.3. *CALL ME, MAYBE* (2012) BY CARLY RAE JEPSEN


Call Me Maybe
Carly Rae Jepsen
Curiosity
Words by Carly Rae Jepsen, Josh Ramsay & Tavish Crowe
♩ = 120
Lead
G
Verse
Aa Ab Ac Ad
C D
mp
I threw a wish in the well
Don't ask me I'll ne- ver tell
I looked to you as it fell
And now you're in my way
Aa Ae Ac Ad
I'd trade my soul for a wish
Pe- nnies and dimes for a kiss
I was-n't looking for this
But now you're in my way
Pre-Chorus
Ba Bb
Your stare was hold- ing
Ripped jeans, skin was show- in'
Bb Bc
Hot night, wind was blow- in'
Where you think you're go- ing ba- by?
Chorus
Ca Cb Cc Cd
C D G Em
Hey, I just met you
and this is cra- zy
But here's my num-ber,
so call me may- be
Ca Cf Cc Cg
It's hard to look right
at you ba- by
But here's my num-ber,
so call me may- be
Ca Cb Cc Cd
Hey I just met you
and this is cra- zy
But here's my num- ber,
so call me may- be
Cb Cf Cc Cg
And all the o- ther boys
try to chase me
But here's my num-ber,
so call me may- be
1/4


Interlude
G
Verse 2
Aa
Ab
Ac
Ad
C
D
You took your time with the call
I took no time with the fall
You gave me no-thing at all
But still you're in my way
Aa
Ae
Ac
Ad
I beg and bor-row and steal
At first sight and it's real
I did-n't know I would feel
it But it's in my way
Pre-Chorus
Ba
Bb
Your stare was hold- ing
Ripped jeans, skin was show- in'
Bb
Bc
Hot night, wind was blow- in'
Where you think you're go- ing baby?
Chorus
Ca
Cb
CC
Cd
Hey, I just met you
and this is cra- zy
But here's my num-ber,
so call me may- be
Ca
Cf
Cc
Cg
It's hard to look right
at you ba- by
But here's my num-ber,
so call me may- be
Ca
Cb
Cc
Cd
Hey I just met you
and this is cra- zy
But here's my num- ber,
so call me may- be
Ch
Cf
Cc
Cg
And all the o- ther boys
try to chase me
But here's my num-ber,
so call me may- be
Chorus Pt. 2
Da
Db
C
G
D
Em
Be- fore you came in- to my
life I missed you so bad
2/4


C Db G | D Dc Em
I missed you so bad | I missed you so so
C Da G | D Db Em
bad Be- fore you came in- to my | life I missed you so bad
C Db G | D Dc Em
And you should know that | I missed you so so
Bridge
C D C D
bad
C Ca | D Cf | C Cc | D Cg
It's hard to look right | at you ba- | by But here's my num-ber, | so call me may- be
Chorus
C Ca G | D Cb Em | C Cc G | D Cd Em
Hey, I just met you | and this is cra- zy | But here's my num- ber, | so call me may- be
C Ch G | D Cf Em | C Cc G | D Cg Em
And all the o- ther boys | try to chase | me But here's my num-ber, | so call me may- be
Outro
C Da G | D Db Em
Be- fore you came in- to my | life I missed you so bad
C Db G | D Dc Em
I missed you so bad | I missed you so so
C Da G | D Db Em
bad Be- fore you came in- to my | life I missed you so bad
3/4

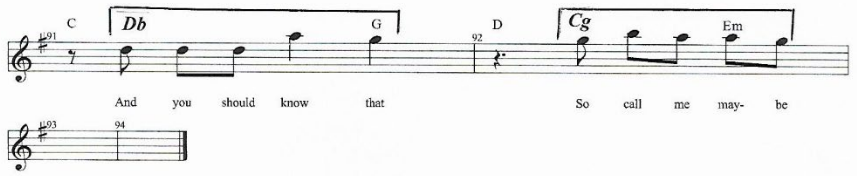


Figure 4.2 *Call Me, Maybe* (2012) by Carly Rae Jepsen

This analysis of *Call Me, Maybe* began with a full transcription of the song (Appendix A), which includes: the lead vocal melody, a backing vocal melody, drums, two violins, two synth lines, two guitar sections, piano and various percussion instruments (shaker, triangle, tambourine and a stick pattern). The song's tempo is 120 beats per minute, and it is in the key of G major. The key was problematic to establish as there seems to be no leading tone (F#) in the vocal melody. Figure 4.2.1 illustrates a pitch class reduction of each section of the song (the notes are notated in the order in which they appear). The song sections include; verses 1 and 2, pre-chorus, chorus, chorus pt. 2, and bridge section. The 'main notes' of the entire song have been included as a summary.

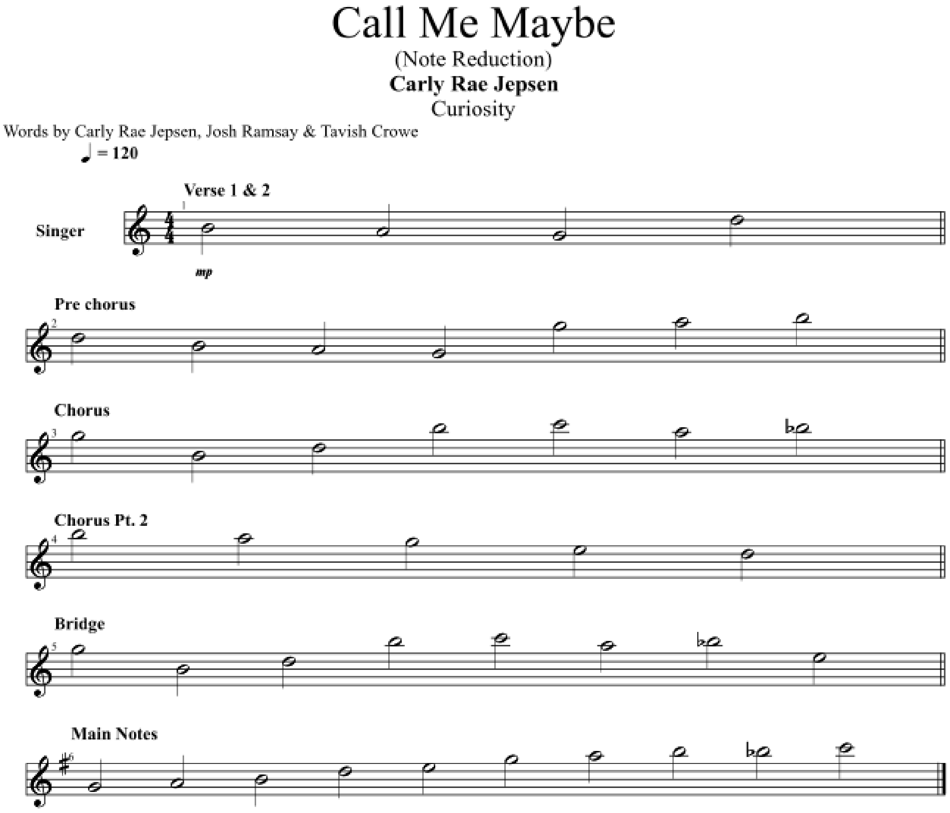
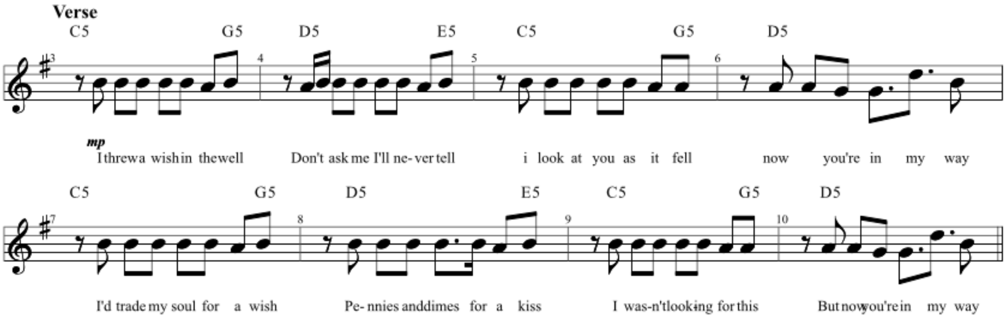

Call Me Maybe
(Note Reduction)
Carly Rae Jepsen
Curiosity
Words by Carly Rae Jepsen, Josh Ramsay & Tavish Crowe
♩ = 120
Verse 1 & 2
Singer
mp
Pre chorus
Chorus
Chorus Pt. 2
Bridge
Main Notes

Figure 4.2.1: Pitch Class Reduction for *Call Me, Maybe* by Carly Re Jepsen

A Section (verses 1 and 2)

Each phrase in the *A* section (verses 1 and 2) is one bar in length. each bar differs slightly in rhythm and pitch, thus warranting separate labelling. For instance: bar 1 *Aa*, bar 2 *Ab*, etc. with certain bars repeated (e.g.: bar 1 and bar 7; bar 5 and bar 9).


Verse
C5 G5 D5 E5 C5 G5 D5
mp
Ithrewa wishin thewell
Don't ask me I'll ne- ver tell
i look at you as it fell
now you're in my way
C5 G5 D5 E5 C5 G5 D5
I'd trade my soul for a wish
Pe- nnies anddimes for a kiss
I was-n'tlook-ing forthis
Butnowyou'rein my way

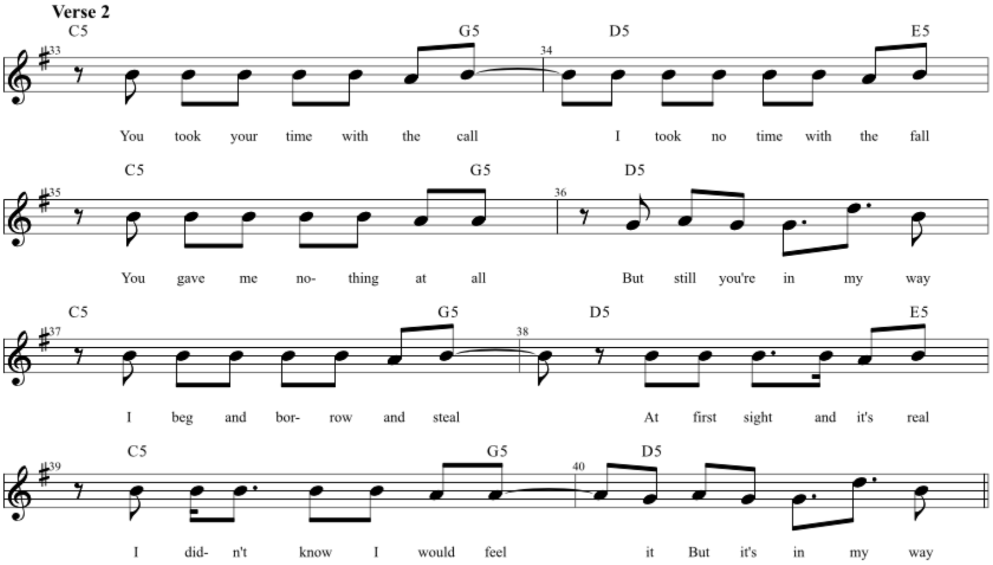

Verse 2
C5 G5 D5 E5
33 34
You took your time with the call I took no time with the fall
C5 G5 D5
35 36
You gave me no- thing at all But still you're in my way
C5 G5 D5 E5
37 38
I beg and bor- row and steal At first sight and it's real
C5 G5 D5
39 40
I did- n't know I would feel it But it's in my way

Figure 4.2.2: ***A*** **Section (verses 1 and 2)**

Every bar in the A section shares the notes A and B. The major 2nd interval is repeated in each sub-phrase of the melody. Additional notes G and D appear in bar 6 and bar 10, a perfect 4th and a minor 3rd. The repeated step-wise movements create the expectation for a leap in the melody. The repeated use of the major 2nd interval was once considered to be a dissonant interval. In pop music today, the interval is considered consonant and associated with feelings of incompleteness. In this song it ties in well with the sense of indecision, or perhaps flirtatiousness that is communicated in the lyric.

Pre-Chorus – *B* section

The *B* section displays more melodic contour per bar than the *A* section.

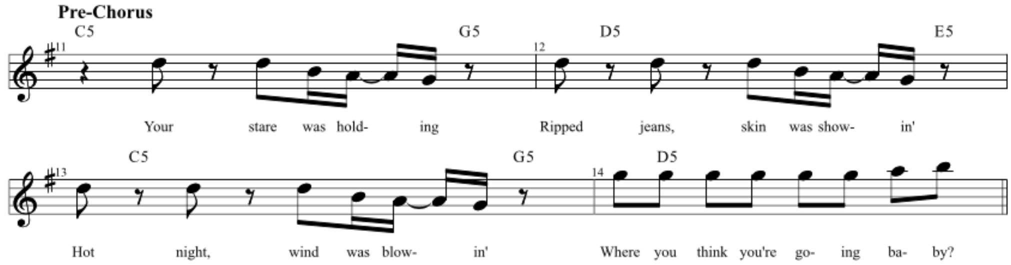

Pre-Chorus
C5 G5 D5 E5
11 12
Your stare was hold- ing Ripped jeans, skin was show- in'
C5 G5 D5
13 14
Hot night, wind was blow- in' Where you think you're go- ing ba- by?

Figure 4.2.3: ***B*** **Section (pre-chorus)**

There is a major 2nd interval in every bar of the B section, with the melody moving by step down to the tonic. This repetition of the tonic chord gives the section a sense of stasis. Narmour's I-R model can be applied to the repetitive melody of the *B* section. For example: the beginning three notes in bar 11 (D, D, B) can be represented as P (process), which refers to the melodic motion in the same registral direction combined with similar intervallic motion. The same applies to the next three notes in bar 11 (A, A, G), as they follow the same melodic contour. In bar 12 the first three notes can be represented as D (duplicate), as they are the same note. P (process) applies once again to the next three notes in bar 12 (B, A, A). Bars 12 and 13 are repeated, whereas bar 14 displays mostly G (duplicate). From this analysis we can establish that the I-R model is consistent with its proposed universality.

Chorus – *C* section

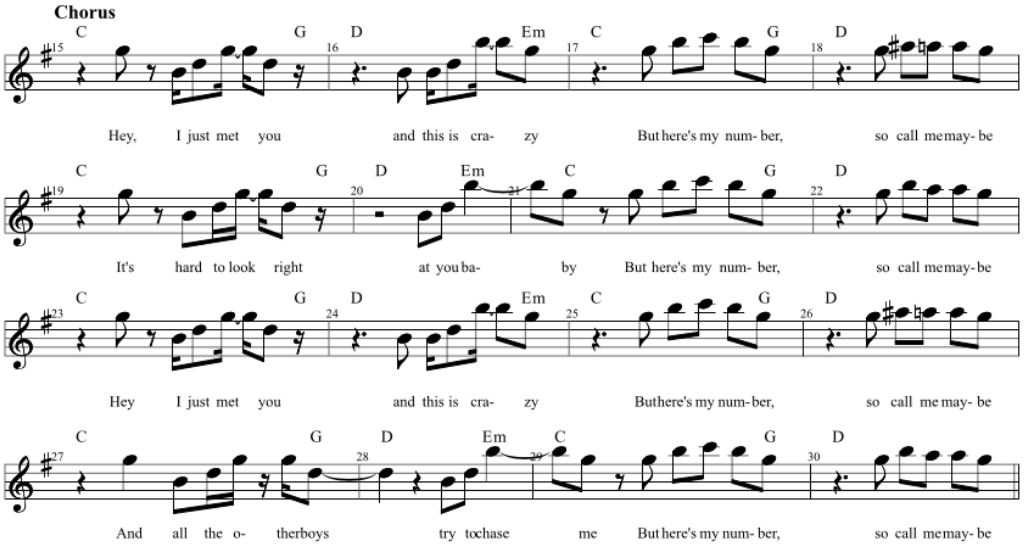

Chorus
C G D Em C G D
15 16 17 18
Hey, I just met you and this is cra- zy But here's my num- ber, so call me may- be
C G D Em C G D
19 20 21 22
It's hard to look right at you ba- by But here's my num- ber, so call me may- be
C G D Em C G D
23 24 25 26
Hey I just met you and this is cra- zy But here's my num- ber, so call me may- be
C G D Em C G D
27 28 29 30
And all the o- ther boys try to chase me But here's my num- ber, so call me may- be

Figure 4.2.4: *C* Section (chorus)

The *C* section displays the use of varied intervals such as *Ca* (bar 15), which contains a minor 6th, minor 3rd as well as a perfect 4th. When compared to the *A* and *B* sections, the *C* section contains more 'leaps', whereas the *A* and *B* sections contain a more stepwise contour of the vocal melody for variation and emphasis.

The stepwise melodic contour suggests a sense of close proximity (suggesting gestalt) and is perceived as belonging together. The leaps here suggest a gap in the proximity of the intervals and are used to give the listener a sense of uncertainty that aligns well with the lyrical content of this song, i.e. Jepsen's scepticism that the person she gave her number to is going to call. Most notes in the vocal phrases of the *C* section resolve on the D note, 5th degree of the G major scale, thus establishing a somewhat stable resolution at the end of each phrase, however not as stable as a tonic resolution. This once again establishes a sense of doubt, so prevalent throughout the musical work, ultimately playing on the expectation of the listener.

Chorus Pt. 2 (section *D*):

This section appears after the second-last chorus and as an 'outro' to the song.

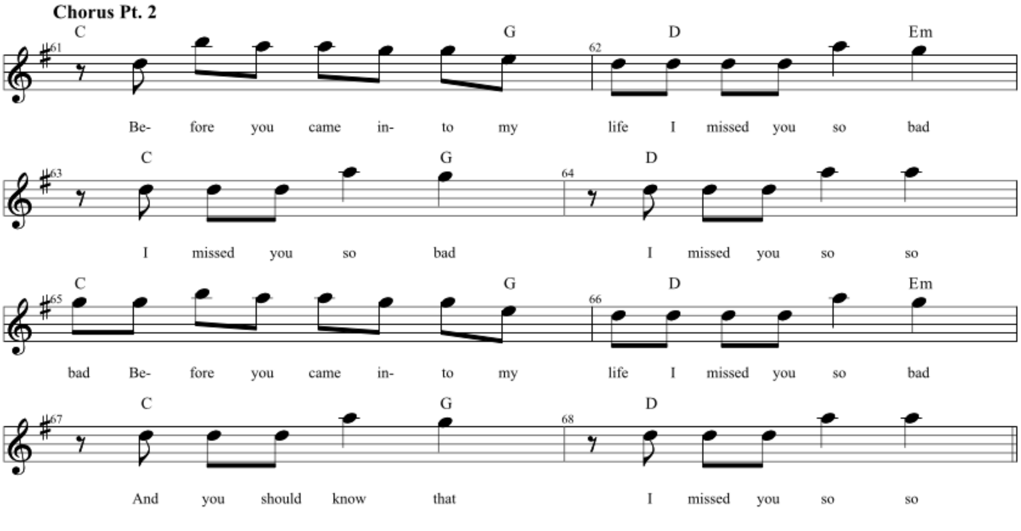
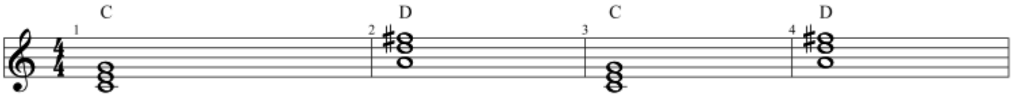

Chorus Pt. 2
C
G
D
Em
61
62
Be- fore you came in- to my life I missed you so bad
63
64
I missed you so bad I missed you so so
65
66
bad Be- fore you came in- to my life I missed you so bad
67
68
And you should know that I missed you so so

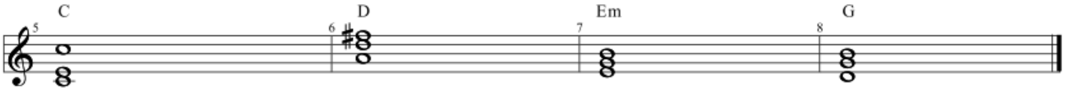
Figure 4.2.5: *D* Section (chorus pt. 2)

Mostly the melody moves in a stepwise manner, but there are a small number of larger leaps around the tonic that are significant. For example, the perfect 5th in bar 62 acts as an appoggiatura, which is followed by resolution by step. The perfect 5th is one of the most stable intervals (along with unison and octave). This section is highly repetitive, perhaps to drive the lyrical content of the song.

Harmonic Analysis (implications from melody)



The chords in the *A* section (verses 1 and 2) are C and D and the notes of the lead vocal melody are: A, B, G, D, with the most common note being the B.



While transcribing the chords for *Call Me, Maybe*, it became clear that the chords do not conform to the conventional structure that a pop hit would typically use. It is in the key of G major and a C and D can be heard; however, these notes are in the bass, thus the C and D are anticipating G throughout the piece.

Call Me, Maybe displays complex musical textures that comprise multiple layers (see Appendix A). Gestalt theory applies here; for example, the vocal melody is the focal point in the verse. However, the violin melodies in the chorus are prominent and playing an independent melody. For gestalt perception to be focused onto one of these layers or onto the sum thereof, in both instances there is attention by the listener to both melodies at the same time.

The gestalt principle of proximity can be identified in the notes of the vocal melody of *Call Me, Maybe*, with the notes that are near to each other (within each bar). These notes are perceived as belonging together, thus expressed as individual 'phrases' throughout the entire composition. Phrases in the analysis of *Call Me, Maybe* have also been identified in places where the singer tends to take a breath, providing a rest within the notation and ultimately arranging the tones further away from each other and not being perceived together as one long linear melody. Therefore, it can be established according to the principle of proximity (a concept of the I-R Model) within *Call Me, Maybe* that each bar is perceived as an individual phrase, like that in speech, with single sentences. Furthermore, the harmonic structure of *Call Me, Maybe* parallels the whole story of the song: we as listeners are kept waiting for that G in the same way that the singer is waiting for her phone to ring. All the phrases are short, as mentioned above, one bar in length, and in my opinion as a composer, this conveys a sense of nervousness in talking in short sentences. The entire song keeps the listener expecting a resolution to the tonic that never actually comes. This consistent experience of expectation within the work, I believe, is a central reason this particular work was a number one hit. It aligns with Meyer's philosophy that engagement of the human brain's predictive mechanisms will cause an expectation in response to music (in this case, vocal melody).

In the analysis of *Call Me, Maybe* as a whole, the principle of proximity and the principle of similarity are closely related. In this composition we find that similar elements are perceived as belonging together. For example, from bar 3 to bar 10 (verse 1), all phrases sound similar due to the rhythm and the limited range of notes and intervals used. When we eventually get to bars 33 to 40 (verse 2), we relate this back to what we have heard in the beginning due to the same range of notes and rhythm being used over and over.

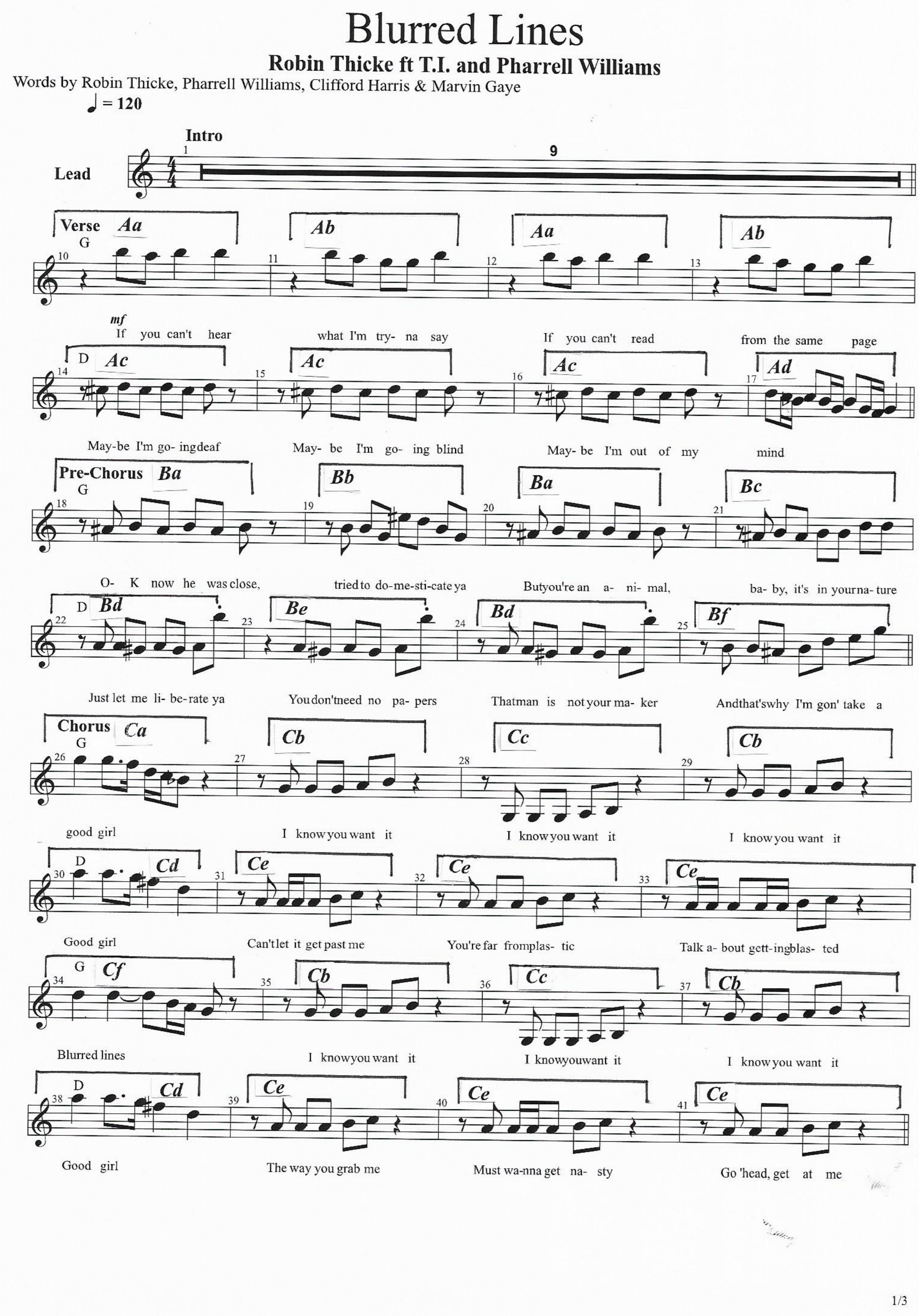
The principle of closure can be seen in the chorus of this composition. Although the key of this composition cannot be immediately established, most individual phrases within the chorus section resolve on G, for example bars 16–18, 20–22, 24–26 and 28–30. This process allows the listener to experience fulfilment, as expectation is no longer denied at the end of each melodic phrase. The repetition of the G chord reinforces it as a tonic even if there is no strong cadence on G.

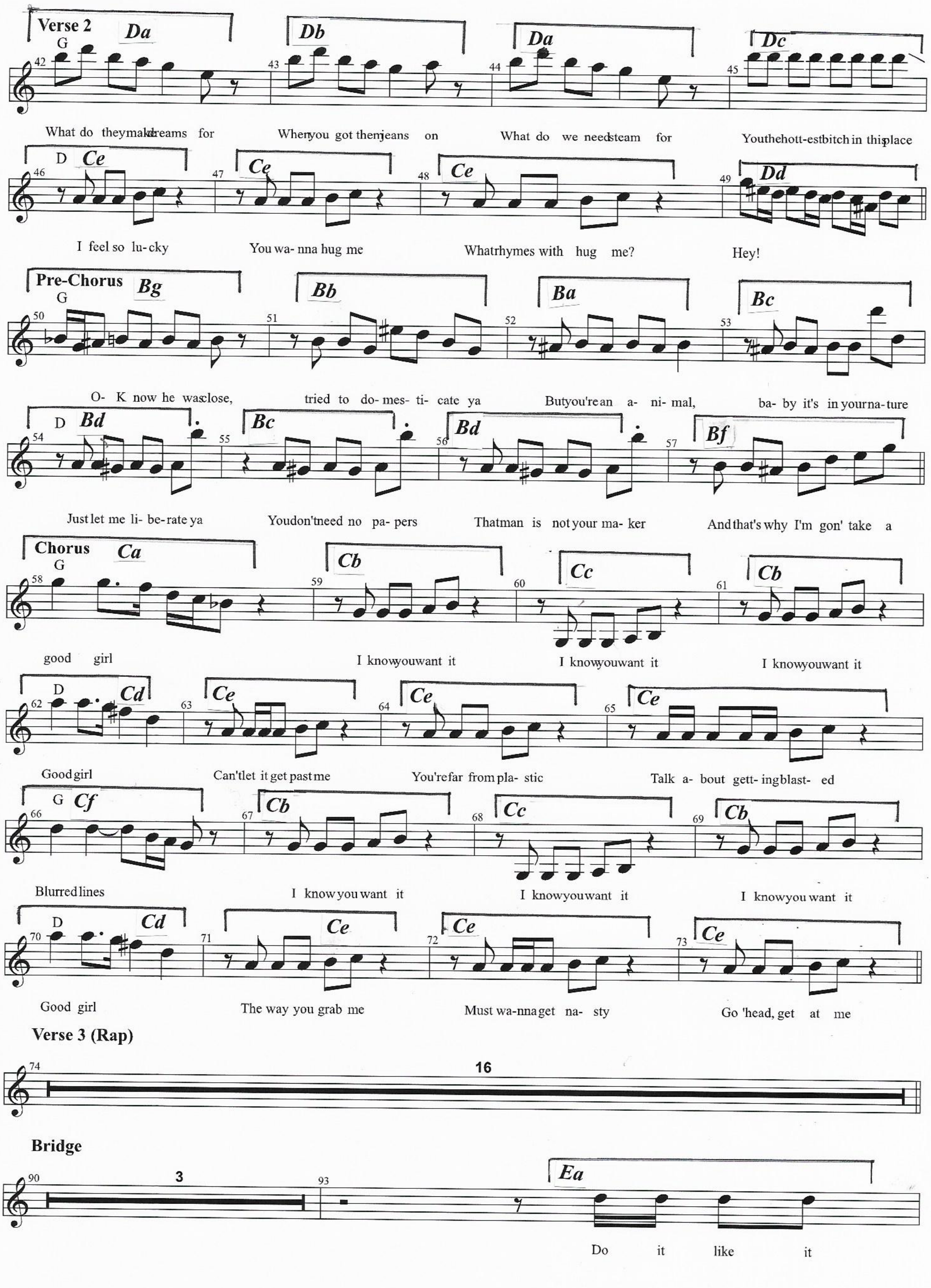
Narmour's concept of registral direction can also be identified in the chorus of *Call Me, Maybe*. For instance, in bar 16 we see that smaller intervals imply a continuation of pitch direction, where the notes are B, B, D (small intervals) and are ascending in this case, whereas the next note is the octave of the previous B note, and the note after that has descended from B (octave) to a G note. Thus, as per Narmour's concept, larger intervals imply a change of direction in the melody as examined in bar 16.

Summary and Conclusions

Call Me Maybe conforms to the gestalt principles of proximity, similarity and closure and to concepts of the I-R model. Expectation is denied until the last note of most bars where the phrases resolve to what has been established as the tonic (G). This is similar to that of *Happy,* but with shorter vocal melodies per phrase.

4.4. *BLURRED LINES* (2013) BY ROBIN THICKE AND PHARRELL WILLIAMS


Blurred Lines
Robin Thicke ft T.I. and Pharrell Williams
Words by Robin Thicke, Pharrell Williams, Clifford Harris & Marvin Gaye
♩ = 120
Intro
Lead
9
Verse Aa G
Ab
Aa
Ab
mf
If you can't hear
what I'm try- na say
If you can't read
from the same page
D Ac
Ac
Ac
Ad
May-be I'm go- ingdeaf
May- be I'm go- ing blind
May- be I'm out of my
mind
Pre-Chorus Ba G
Bb
Ba
Bc
O- K now he was close,
tried to do-me-sti-cate ya
Butyou're an a- ni- mal,
ba- by, it's in yourna- ture
D Bd
Be
Bd
Bf
Just let me li- be-rate ya
You don'tneed no pa- pers
Thatman is notyour ma- ker
Andthat'swhy I'm gon' take a
Chorus Ca G
Cb
Cc
Cb
good girl
I know you want it
I know you want it
I know you want it
D Cd
Ce
Ce
Ce
Good girl
Can'tlet it get past me
You're far fromplas- tic
Talk a- bout gett-ingblas- ted
G Cf
Cb
Cc
Cb
Blurred lines
I knowyou want it
I knowyouwant it
I know you want it
D Cd
Ce
Ce
Ce
Good girl
The way you grab me
Must wa-nna get na- sty
Go 'head, get at me
1/3


Verse 2
G
Da
Db
Da
Dc
What do they make dreams for
When you got them jeans on
What do we need steam for
You the hott-est bitch in this place
D
Ce
Ce
Ce
Dd
I feel so lu- cky
You wa- nna hug me
What rhymes with hug me?
Hey!
Pre-Chorus
G
Bg
Bb
Ba
Bc
O- K now he was close,
tried to do- mes- ti- cate ya
But you're an a- ni- mal,
ba- by it's in your na- ture
D
Bd
Bc
Bd
Bf
Just let me li- be- rate ya
You don't need no pa- pers
That man is not your ma- ker
And that's why I'm gon' take a
Chorus
G
Ca
Cb
Cc
Cb
good girl
I know you want it
I know you want it
I know you want it
D
Cd
Ce
Ce
Ce
Good girl
Can't let it get past me
You're far from pla- stic
Talk a- bout gett- ing blast- ed
G
Cf
Cb
Cc
Cb
Blurred lines
I know you want it
I know you want it
I know you want it
D
Cd
Ce
Ce
Ce
Good girl
The way you grab me
Must wa- nna get na- sty
Go 'head, get at me
Verse 3 (Rap)
16
Bridge
3
Ea
Do it like it

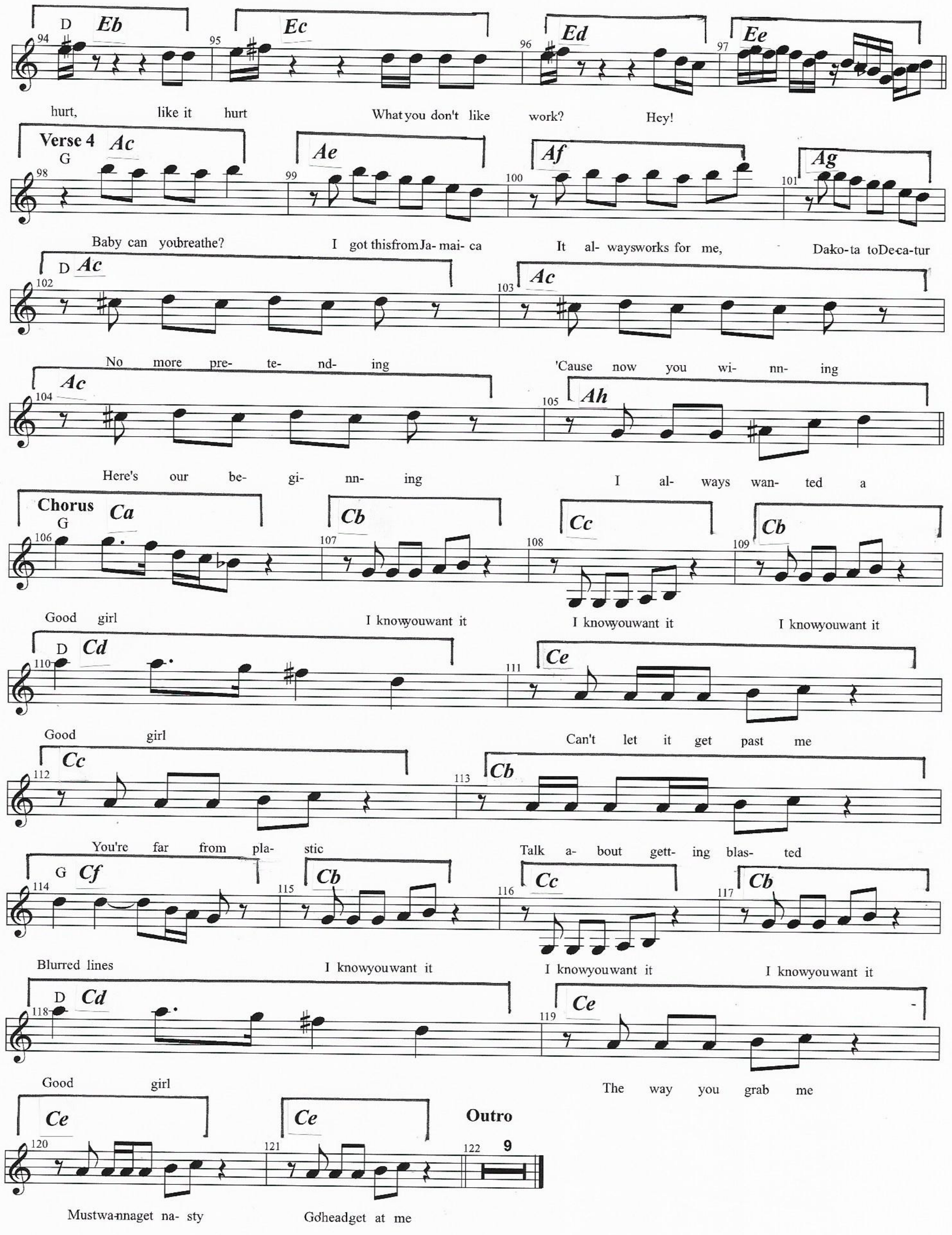

D
Eb
Ec
Ed
Ee
hurt, like it hurt
What you don't like work?
Hey!
Verse 4
G
Ac
Ae
Af
Ag
Baby can you breathe?
I got this from Ja- mai- ca
It al- ways works for me,
Dako- ta to De- ca- tur
D
Ac
Ac
No more pre- te- nd- ing
'Cause now you wi- nn- ing
Ac
Ah
Here's our be- gi- nn- ing
I al- ways wan- ted a
Chorus
G
Ca
Cb
Cc
Cb
Good girl
I know you want it
I know you want it
I know you want it
D
Cd
Ce
Good girl
Can't let it get past me
Cc
Cb
You're far from pla- stic
Talk a- bout gett- ing blas- ted
G
Cf
Cb
Cc
Cb
Blurred lines
I know you want it
I know you want it
I know you want it
D
Cd
Ce
Good girl
The way you grab me
Ce
Ce
Outro
9
Must wanna get na- sty
Go ahead get at me

Figure 4.3: ***Blurred Lines*** **(2013) by Robin Thicke, T.I., and Pharrell Williams**

Each bar has been broken up and labelled in similar ways to the previous songs. Throughout the *A* section and the *B* section of this song we see how there are four-bar phrases with similar rhythmic patterns with variations in pitch and melody. However, there are also a few identical bars (e.g. bars 10 and 12 are identical as well as bars 14, 15 and 16). The phrases are repeated in a seemingly unsystematic pattern (see bars 10 to 17 and bars 26 to 41). I had assumed that each section as well as each phrase would conform to a basic form pattern, as with *Happy* and *Call Me, Maybe*. However, this is not the case. For example: verse 2 should be labelled *Da, Db, Dc*, etc., but instead of continuing with the label *Dd,* the vocal melody reverts back to the identical notes and rhythm presented in the *C* section. Thus, instead of *Dd* we are seeing *Ce* for three bars and then *Dd.* This kind of unsystematic variation in the melody appears throughout the song and adds to its unpredictable appeal.

The pitch range is more varied than that of *Happy* and *Call Me, Maybe* in the sense that there is a wider array of notes sung, for example bars 25 and 36, where a similar rhythm is used with the notes an octave apart. The predominance of major 2nd and minor 2nd intervals in *Blurred Lines* is distinctive. The largest interval of the piece occurs in the *B* section (pre-chorus) and this is a diminished 5th, appearing in bars 19 and 24.

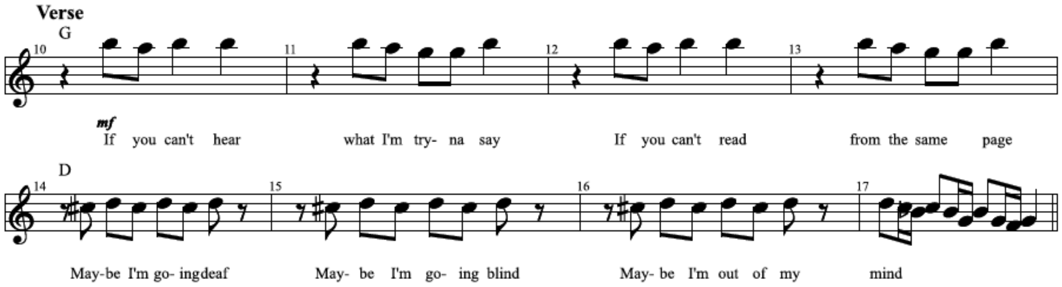


Figure 4.3.1: ***A*** **section (verse 1)**

Verse 1 begins on bar 10 of the song (due to a longer than average introduction).

The vocal melody phrases are broken up into bars throughout the song. Verse 1 displays three variations of rhythm pattern and pitch, for example: bars 10 and 12 are the same regarding pitch and rhythm, bars 11 and 13 are then grouped as identical. Bars 14, 15 and 16 are similar, with bar 17 being completely different. Every interval from bar 10 to 16 is a major 2nd or a major 3rd interval, as the range of notes is quite limited. Bar 17 is a vocal run and descends and ascends in a stepwise manner.

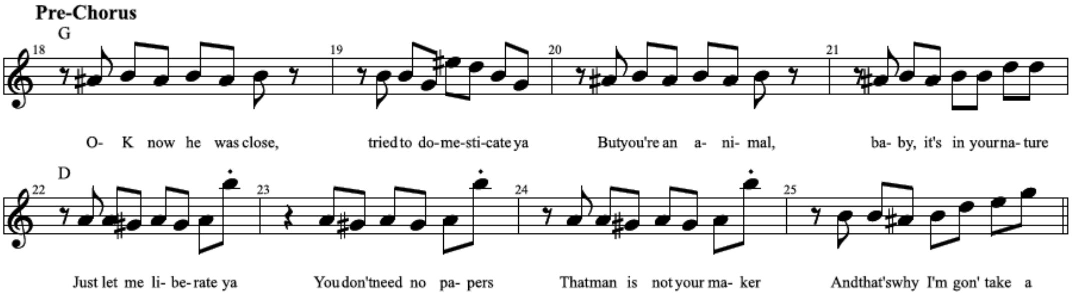

Pre-Chorus
G
D
O- K now he was close,
tried to do-me-sti-cate ya
But you're an a- ni- mal,
ba- by, it's in your na- ture
Just let me li- be- rate ya
You don't need no pa- pers
That man is not your ma- ker
And that's why I'm gon' take a

Figure 4.3.2: ***B*** **section (pre-chorus)**

The pre-chorus section displays every alternate bar as a repeat. For example, bars 18 (*Ba*) and 20 are identical, as are bars 22 (*Bd*) and 24. Bars 19 (*Bb*), 21 (*Bc*), 23 (*Be*) and 25 (*Bf*) are all different in rhythm and pitch. The note range is more varied than the verse, as the intervals range from min 2nd to major 6th. There is the use of a minor 6th interval in 19 (*Bb*). The use of the major and minor 6th intervals along with broad note range in this piece, creates a dynamic and more complex vocal melody as compared to the other pop song melodies analysed.

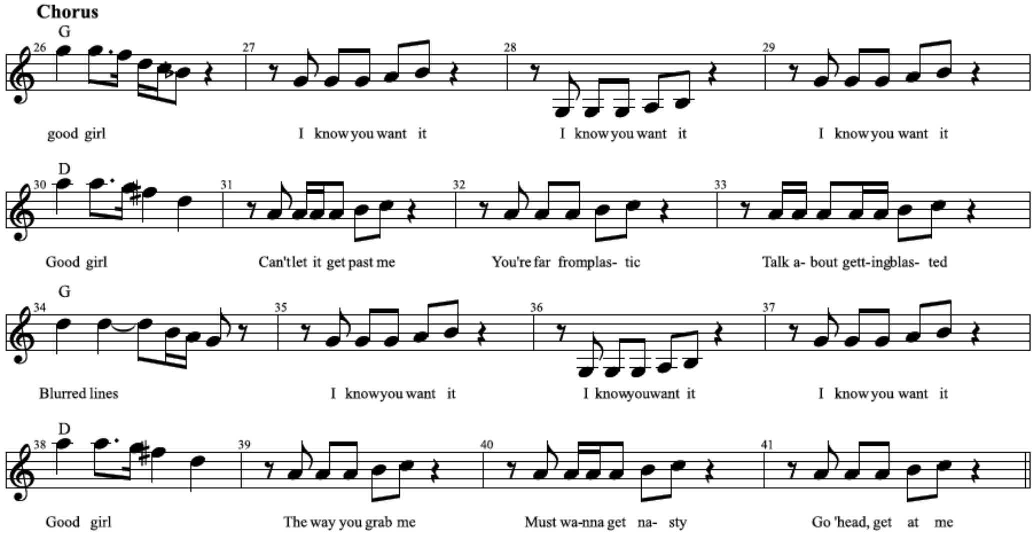

Chorus
G
D
good girl
I know you want it
I know you want it
I know you want it
Good girl
Can't let it get past me
You're far from plas- tic
Talk a- bout gett-ing blas- ted
Blurred lines
I know you want it
I know you want it
I know you want it
Good girl
The way you grab me
Must wa-nna get na- sty
Go 'head, get at me

Figure 4.3.3: ***C*** **section (chorus)**

The chorus section of *Blurred Lines* has no immediate phrase pattern that can be identified. The melody changes dramatically from bar to bar or phrase to phrase. The labelling shows this repetition with variants as follows: *Ca, Cb, Cc, Cb, Cd, Ce, Ce, Ce, Cf, Cb, Cc, Cb, Cd, Ce, Ce, Ce.* As can be seen, the chorus section's form is very different from that of the chorus sections of *Happy* and *Call Me, Maybe*, which follow a definitive pattern that is easily identified and is repetitive.

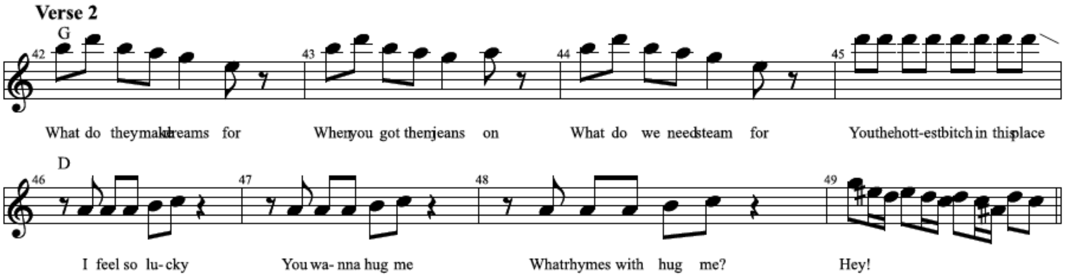

Verse 2
G
42
43
44
45
What do theymakdreams for
Whenyou got thenjeans on
What do we needsteam for
Youthehott-estbitch in thisplace
D
46
47
48
49
I feel so lu-cky
You wa- nna hug me
Whatrhymes with hug me?
Hey!

Figure 4.3.4: ***D*** **section (verse 2)**

The vocal melody in the second verse is vastly different from that of the first verse, thus alternative labelling was employed. Instead of being labelled like that of the *A* section, in verse 2 the melodic phrases required labelling as a new (*D)* section, with melodic phrases also appearing from the *C* section (chorus). For example: bar 42 and bar 44 are labelled *Da,* bar 43 is *Bb* and bar 45 is *Dc.* As verse 2 continues, bars 46, 47 and 48 (*Ce*) are melodies borrowed from the chorus, with alternative lyrics but the same notes and rhythm.

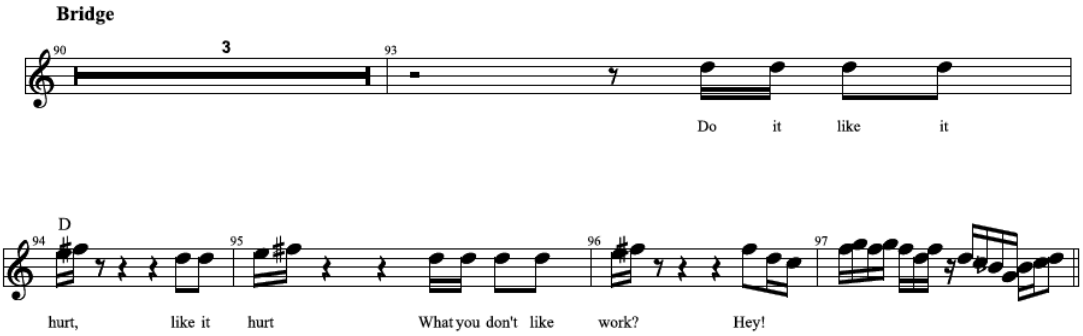

Bridge
90
3
93
Do it like it
D
94
95
96
97
hurt, like it hurt
What you don't like work?
Hey!

Figure 4.3.5: ***E*** **section (bridge)**

The bridge section labelled *E* begins on bar 90; however, the vocal melody begins on bar 93. The bridge section's vocal melody is four bars in length and the melody of each phrase is different, thus warranting alternative labelling for each phrase/bar. The bridge section's note range is limited, as the only intervals present are major 2nd intervals with a major 3rd interval in bar 96.

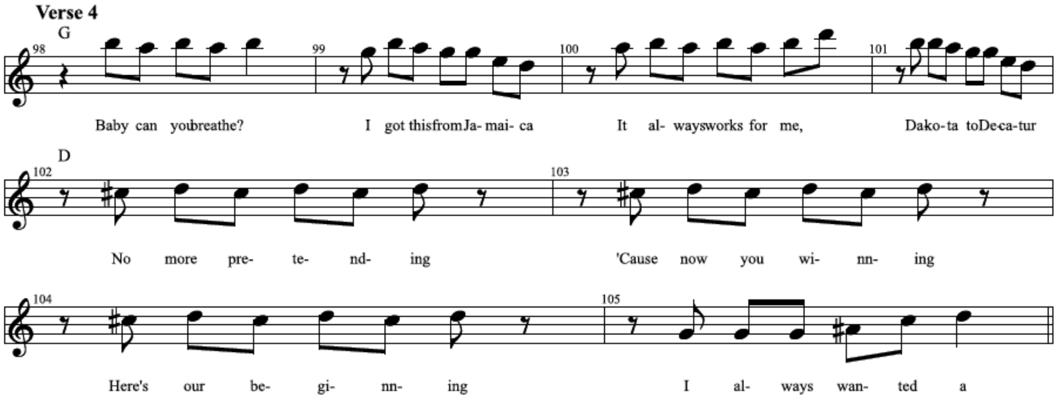

Verse 4
G
98
99
100
101
Baby can youbreathe?
I got thisfromJa- mai- ca
It al- waysworks for me,
Dako- ta toDe-ca-tur
D
102
103
No more pre- te- nd- ing
'Cause now you wi- nn- ing
104
105
Here's our be- gi- nn- ing
I al- ways wan- ted a

Figure 4.3.6: ***A*** **section (verse 4)**

Blurred Lines is unusual in that it consists of four verses. Verse 3 in this analysis has not been included, as it is a section of rap (spoken words recited rapidly in a rhythmical manner devoid of melodic contour). However, verse 4 can be seen as a continuation of verse 1 and is thus labelled as the *A* section, repeating bars such as 98, 102, 103 and 104 (*Ac*), which are melodically and rhythmically identical to bars 12 and 14.

Harmonic Analysis (implications from melody)

The entire composition consists of two chords, G major and D major, which span four bars each. When isolating these two chords separately from the notes in the vocal melody, we could assume that this composition is in either the key of G, D, F or B*b* major. However, when investigating the notes of the melody, the key of the song begins to seem more ambiguous. For example, in bars 14, 15 and 16 the C# in each bar implies D major. However, bars 18, 20 and 21 incorporate an A# note, refuting D major as the key. The A# can be seen here as a passing tone – a note foreign to a harmony used to produce a melodic transition. In every second line of the chorus section in *Blurred Lines* there is an F# note, bars 30, 38, 62, 70, 110 and 118 once again alluding to the key of D major.

Blurred Lines conforms less to gestalt principles than *Happy* and *Call Me, Maybe* in that it displays less of a vocal pattern and rigid melody structure.

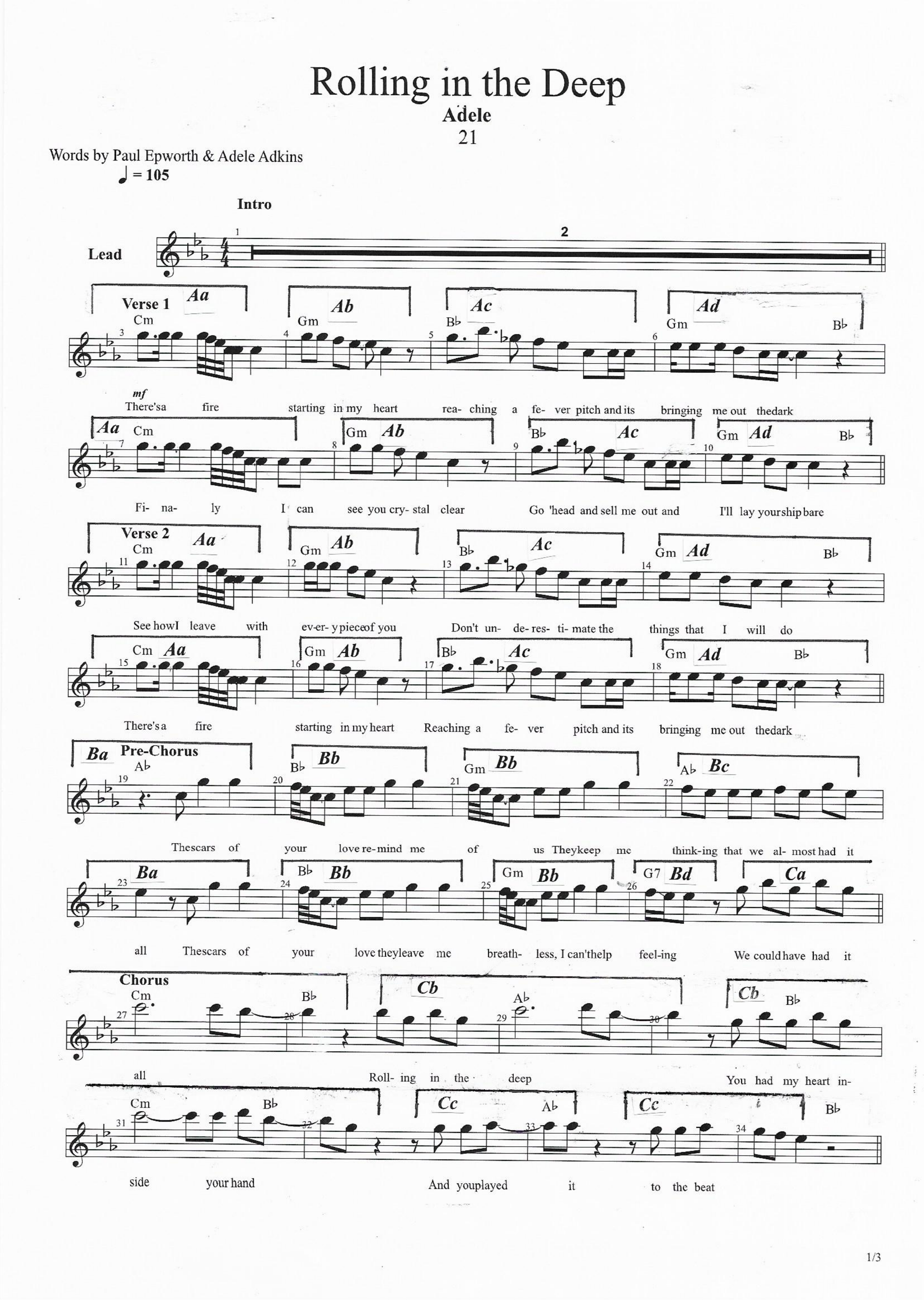
The gestalt principle of closure can be seen at the ending of a large majority of the melodic phrases; however, they do vary. The last notes of the phrases will cause the listener to experience closure to a certain degree when ending on the G notes, now alluding to the possibility of the composition being in the key of G. For example, bar 17 (the end of the verse section) ends on a G note, bar 25 (end of the pre-chorus section) similarly ends on a G note. However, the chorus section denies our expectation and denies our sense of closure. It is for this reason that the listener might keep coming back to the song, as the human mind does not enjoy such 'loose ends'. When we see a figure or hear a melody that appears to be partially closed or unresolved, our mind's tendency is to 'complete' it, suggesting gestalt and the theories of Meyer and Narmour, even if that means supplying imaginary visual or auditory information. That is what I believe happens within this composition. We think the chorus has resolved but it has not, playing on expectation, and ultimately making us come back for more. This therefore affirms my hypothesis that expectation is linked to catchiness.

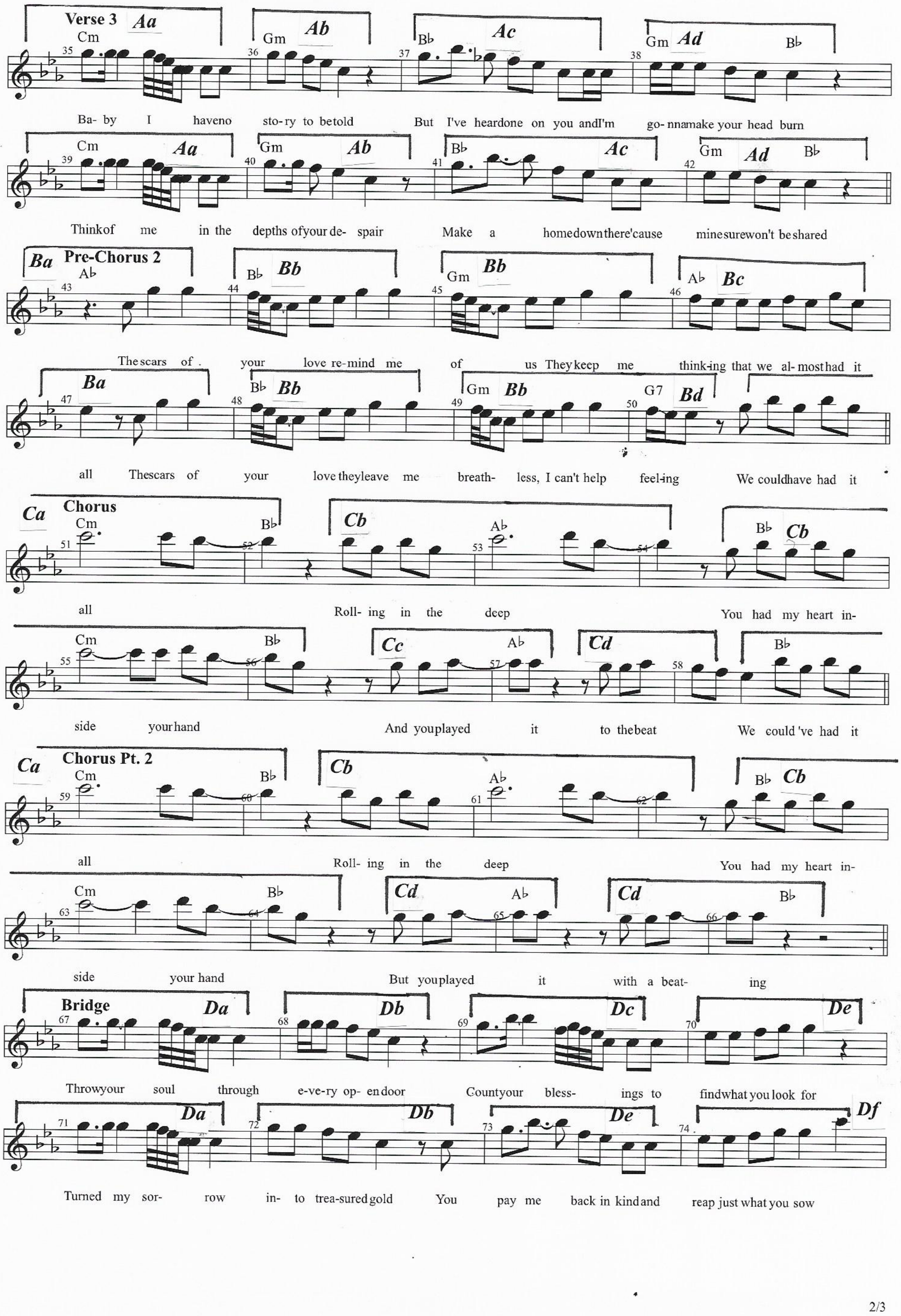
With reference to Narmour's concept of registral direction, where larger intervals imply a change of direction in the melody, I have noticed that within this composition the notes in the melody that follow the large interval leap tend to be unison, for example bars 30–31 and 107–108. In bar 30 the melody is descending in small intervals (A, G, F#, D) and in bar 31 the melody descends further by a leap from a D note to an A, where there are then three repeats of the A before ascending to D then C.

Summary and Conclusions

The key of *Blurred Lines* is ambiguous and the tonality is unresolved. The lack of closure thwarts our sense of resolution and heightens expectation. This song does conform to gestalt principles, as well as some of the tenets of the I-R model, but less so than *Happy* and *Call Me, Maybe*. The vocal melodies are not as structured when compared to these pop songs, and this is what I believe denies listeners' expectation, ensuring they return to the song over and over again. Ultimately, it is this dynamic of tension and irresolution that toys with the listener's sense of expectation and makes the song catchy.

4.5. *ROLLING IN THE DEEP* (2011) BY ADELE


Rolling in the Deep
Adele
21
Words by Paul Epworth & Adele Adkins
♩ = 105
Intro
Lead
Verse 1
Aa Ab Ac Ad
Cm Gm B♭ Gm B♭
mf
There'sa fire starting in my heart rea- ching a fe- ver pitch and its bringing me out thedark
Aa Ab Ac Ad
Cm Gm B♭ Gm B♭
Fi- na- ly I can see you cry- stal clear Go 'head and sell me out and I'll lay yourship bare
Verse 2
Aa Ab Ac Ad
Cm Gm B♭ Gm B♭
See howI leave with ev-er- y pieceof you Don't un- de- res- ti- mate the things that I will do
Aa Ab Ac Ad
Cm Gm B♭ Gm B♭
There's a fire starting in my heart Reaching a fe- ver pitch and its bringing me out thedark
Pre-Chorus
Ba Bb Bb Bc
A♭ B♭ Gm A♭
Thescars of your love re-mind me of us Theykeep me think-ing that we al- most had it
Ba Bb Bb Bd Ca
B♭ Gm G7
all Thescars of your love theyleave me breath- less, I can'thelp feel-ing We could have had it
Chorus
Cb Cb
Cm B♭ A♭ B♭
all Roll- ing in the deep You had my heart in-
Cc Cc
Cm B♭ A♭ B♭
side your hand And youplayed it to the beat
1/3


Verse 3 Aa Cm
Gm Ab
B♭ Ac
Gm Ad B♭
Ba- by I have no sto- ry to be told But I've heard one on you and I'm go- nna make your head burn
Cm Aa
Gm Ab
B♭ Ac
Gm Ad B♭
Think of me in the depths of your de- spair Make a home down there 'cause mine sure won't be shared
Ba Pre-Chorus 2 A♭
B♭ Bb
Gm Bb
A♭ Bc
The scars of your love re- mind me of us They keep me think- ing that we al- most had it
Ba
B♭ Bb
Gm Bb
G7 Bd
all The scars of your love they leave me breath- less, I can't help feel- ing We could have had it
Ca Chorus Cm B♭
Cb A♭
B♭ Cb
all Roll- ing in the deep You had my heart in-
Cm B♭
Cc A♭
Cd
B♭
side your hand And you played it to the beat We could 've had it
Ca Chorus Pt. 2 Cm B♭
Cb A♭
B♭ Cb
all Roll- ing in the deep You had my heart in-
Cm B♭
Cd A♭
Cd B♭
side your hand But you played it with a beat- ing
Bridge Da
Db
Dc
De
Throw your soul through e- ve- ry op- en door Count your bless- ings to find what you look for
Da
Db
De
Df
Turned my sor- row in- to trea- sured gold You pay me back in kind and reap just what you sow
2/3

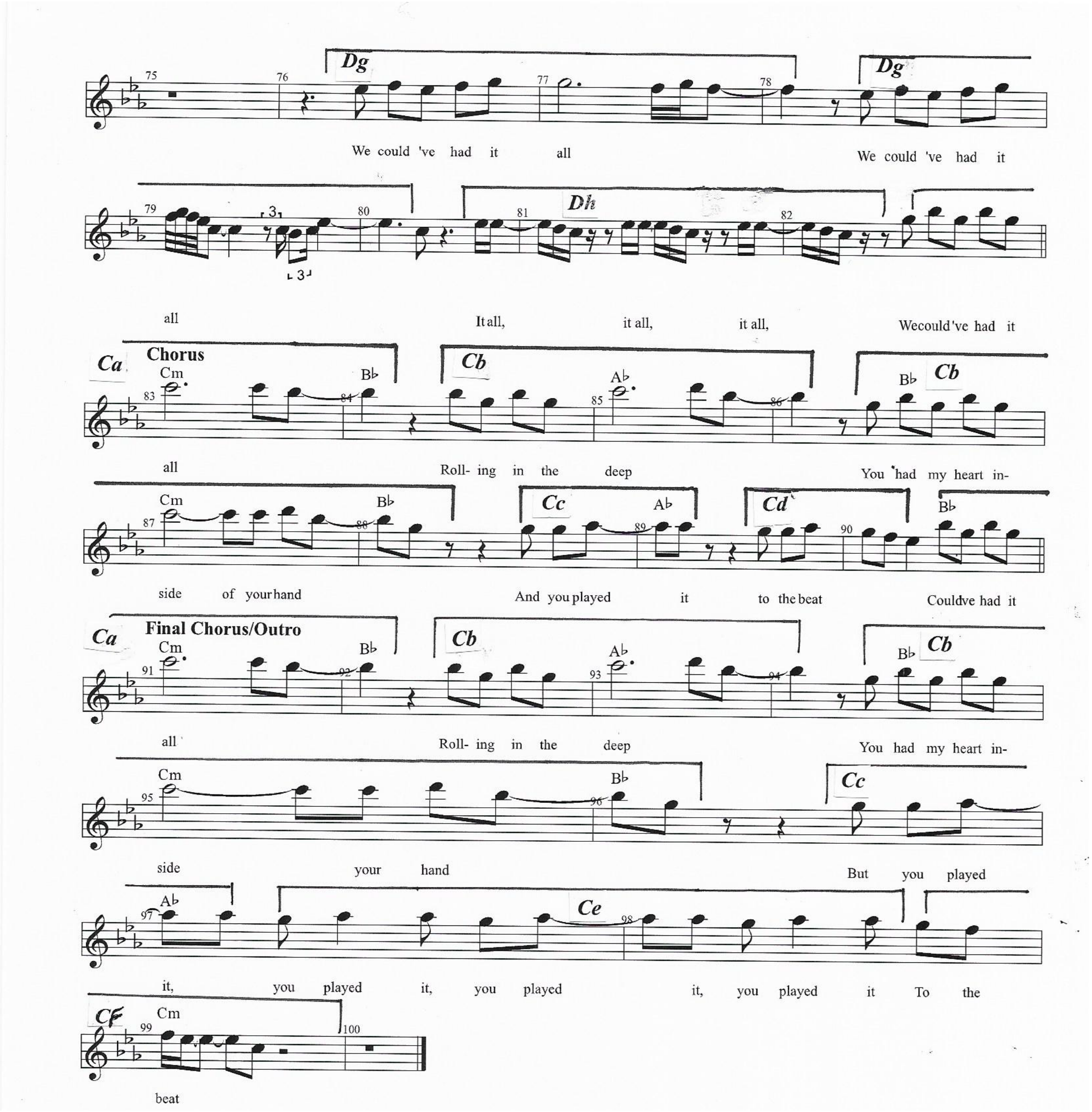

Dg
We could 've had it all
Dg
We could 've had it
Dh
all
It all, it all, it all,
Wecould've had it
Ca
Chorus
Cm
Bb
Cb
Ab
Bb
Cb
all
Roll- ing in the deep
You had my heart in-
Cm
Bb
Cc
Ab
Cd
Bb
side of yourhand
And you played it to the beat
Couldve had it
Ca
Final Chorus/Outro
Cm
Bb
Cb
Ab
Bb
Cb
all
Roll- ing in the deep
You had my heart in-
Cm
Bb
Cc
side your hand
But you played
Ab
Ce
it, you played it, you played it, you played it To the
Cf
Cm
beat

Figure 4.4: *Rolling in the Deep* (2011) by Adele

The full transcription of *Rolling in the Deep* shows a form of verse / chorus with a bridge section. This song is in the key of B*b* and at a tempo of 105 beats per minute. This hit is high energy and crafted specially for that purpose. In the verses, the vocal melody descends while in the chorus section it ascends. This creates momentum and adds to the energy of the musical work. *Rolling in the Deep* presents a commonly used element in pop song writing and production to maintain the interest of the listener: that of enhancing the number and volume of instrumentation.

A Section verses 1, 2 and 3

Rolling in the Deep contains three identical verses. Each melodic phrase of *Rolling in the Deep* is contained in a single bar. The melodic phrases follow precisely the same rhythmic and melodic contour in all three verses. Phrases are not repeated, thus presenting the listener with a form as follows: *Aa, Ab, Ac* and *Ad.*

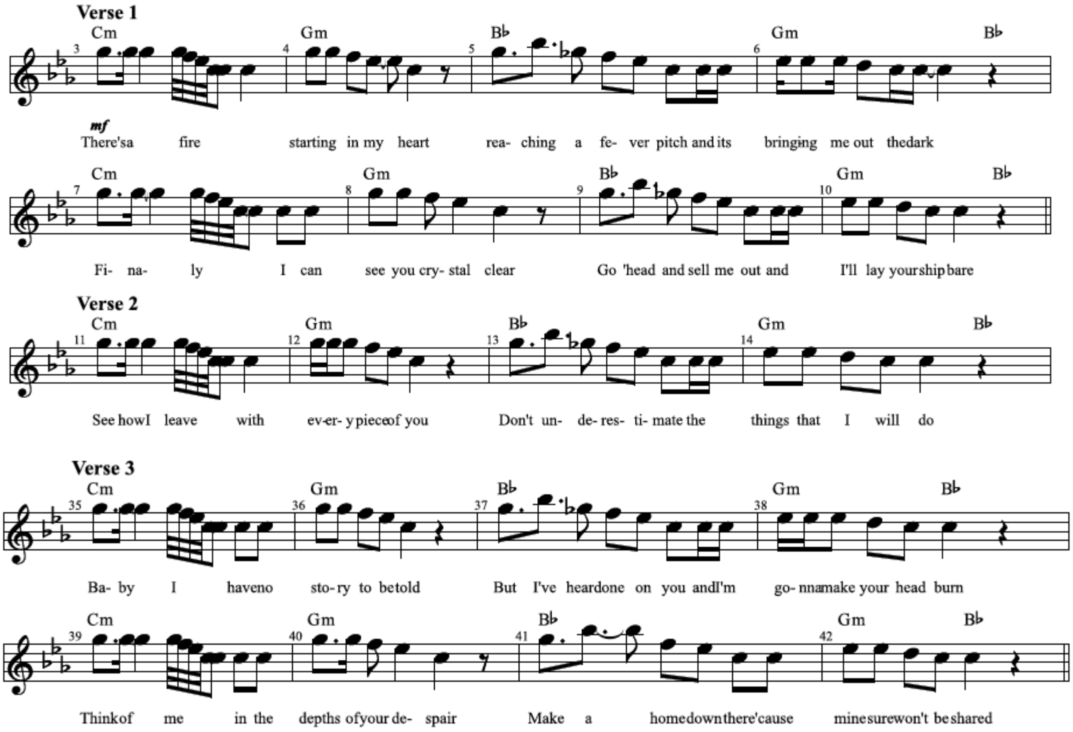

Verse 1
Cm Gm B♭ Gm B♭
3 4 5 6
mf
There'sa fire starting in my heart rea- ching a fe- ver pitch and its bringing me out thedark
Cm Gm B♭ Gm B♭
7 8 9 10
Fi- na- ly I can see you cry- stal clear Go 'head and sell me out and I'll lay yourship bare
Verse 2
Cm Gm B♭ Gm B♭
11 12 13 14
See howI leave with ev-er- y pieceof you Don't un- de- res- ti- mate the things that I will do
Verse 3
Cm Gm B♭ Gm B♭
35 36 37 38
Ba- by I haveno sto- ry to be told But I've heardone on you andI'm go- nnamake your head burn
Cm Gm B♭ Gm B♭
39 40 41 42
Thinkof me in the depths ofyour de- spair Make a homedownthere'cause minesurewon't beshared

Figure 4.4.1: ***A*** **section (verses 1, 2 and 3)**

The notes tend to move (mostly) in a stepwise motion but at the ending of each phrase there are larger leaps between intervals (for example at bar 3 to bar 4, and bar 4 to bar 5). In other words, the leap between the last note in a bar and the first note in the following bar represents a large leap. This marks a clear break between phrases that is reflected in the labelling: e.g. the last note in bar 3 – C (*Aa*), ascending to the first note in bar 4 – G (*Ab*), is a perfect 5th (7 semitones) and constitutes a leap, resulting in a change of direction consistent with the theories of the I-R model proposed by Narmour (1990). The same can be seen throughout the A section, for example bars 4-5, 7-8, 8-9 and so on.

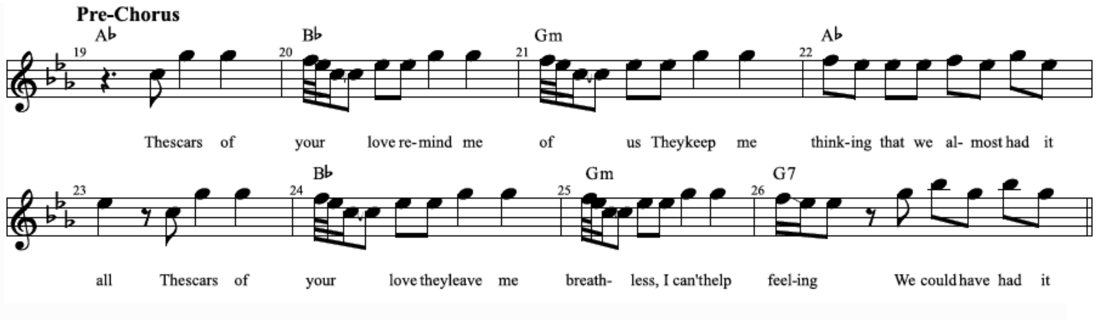

Pre-Chorus
A♭
B♭
Gm
A♭
19
20
21
22
Thescars of your love re-mind me of us Theykeep me think-ing that we al- most had it
23
B♭
24
Gm
25
G7
26
all Thescars of your love theyleave me breath- less, I can'thelp feel-ing We could have had it

Figure 4.4.2: *B* section (pre-chorus)

The form of the pre-chorus behaves much like that of the verses except for bar 26 (*Bd)*, where the chorus melody begins on the second offbeat. The syncopation causes the listener to experience a sense of anticipation. This is where the melodic phrase structure begins to change. (In fact, it is quite similar to the melodic phrases presented in *Happy*, where phrases are not contained to a bar but rather expand over bar lines into longer, more drawn-out phrases.)

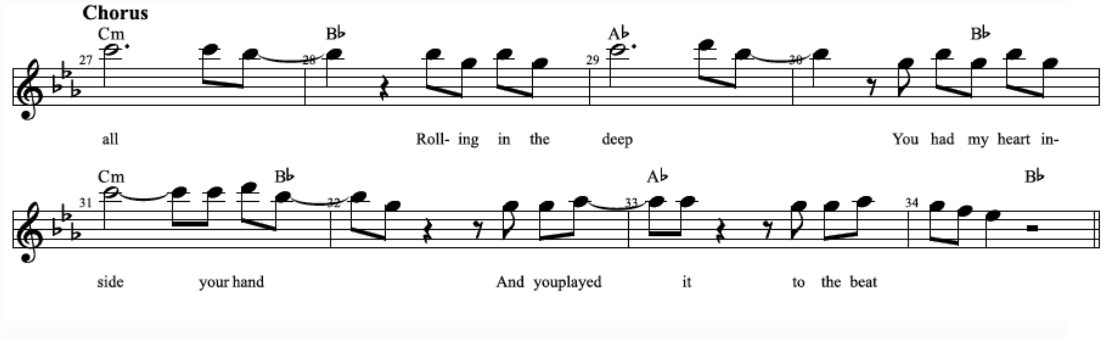

Chorus
Cm
B♭
A♭
B♭
27
28
29
30
all Roll- ing in the deep You had my heart in-
Cm
B♭
A♭
B♭
31
32
33
34
side your hand And youplayed it to the beat

Figure 4.4.3: *C* section (chorus)

The chorus section of *Rolling in the Deep* contains phrases that run over bar lines and have been labelled accordingly. Example: *Cb* begins on the 3rd beat of bar 28 and ends on the first beat of bar 30. Concepts of the I-R model apply here; for example, in bar 27, P (process) applies as we can see intervals in the same registral direction combined with similar intervallic motion. In bar 28, ID (intervallic duplication) applies; that is, small interval to identical small interval in different registral directions.

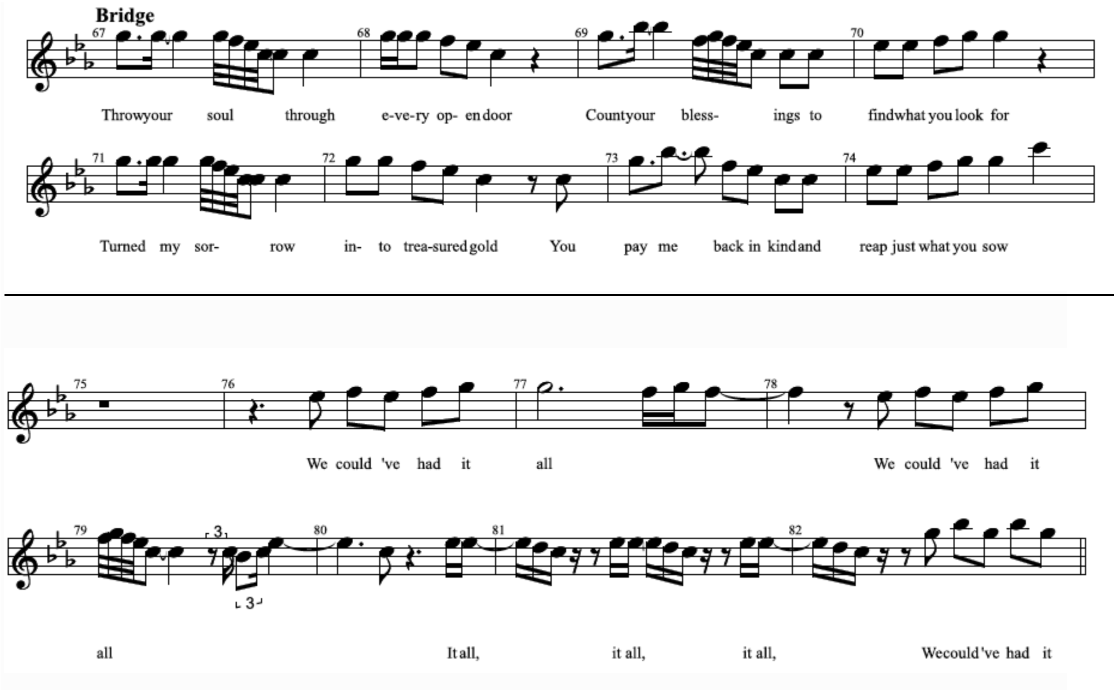

Bridge
67
68
69
70
Throwyour soul through e-ve-ry op- endoor Countyour bless- ings to findwhat you look for
71
72
73
74
Turned my sor- row in- to trea-suredgold You pay me back in kindand reap just what you sow
75
76
77
78
We could 've had it all We could 've had it
79
3
3
80
81
82
all It all, it all, it all, Wecould've had it

Figure 4.4.4: *D* section (bridge)

The bridge section is 16 bars in length, with variations to the vocal melody. Bars 67 and 71 are labelled (*Da*), 68 and 72 (*Db*), 69 and 73 (*Dc*) to show these variants. One exception is bar 73, which has a slightly different rhythm to bar 69, although the label is the same because the additional notes in bar 69 are part of a ‘vocal run’.

Harmonic Analysis (implications from melody)

The chords in *Rolling in the Deep* display a standard pattern typical of twenty-first-century pop music and tend to be quite repetitive. The verse chords include: C minor, G minor, B*b* major repeated throughout the three verses. The vocal melodies in the verses are segmented into phrases (*Aa, Ab, Ac* etc.) all ending on C, the 6th degree of the scale (submediant), and this generally gives a feeling of relaxation. Unlike *Happ*y – the verses of *Rolling in the Deep* do not eventually give the listener a sense of closure, thus Adele (the artist/composer) denies the listener’s expectation, as the notes do not resolve to the tonic at the end of the vocal phrases, thus creating tension within the verses.

The pre-chorus includes A*b*, B*b*, Gm and G7 chord, while the vocal melody in each lyrical phrase now ends on a G note, the 3rd degree of the scale (mediant). This gives the listener a slightly more stable resolution than that of the 6th in the verses but still does not provide complete resolution. This is because the 3rd degree serves as a mid-way point between I and V. The chords in the chorus comprise C minor, B flat major, A flat major. Here most of the vocal melody resolves on the 5th degree of the scale – the B flat (dominant), once again denying the listener's expectation.

Summary and Conclusions

The gestalt principle of closure can be experienced throughout *Rolling in the Deep* in the sense that closure is not achieved as the vocal phrases either end on the 6th, 3rd or 5th degrees, depending on the section of the composition. Expectation is continually denied, thus building tension and ultimately keeping the listener in suspense. This makes the composition catchy and the listener essentially *comes back for more.*

CHAPTER 5

PRACTICAL IMPLEMENTATION OF HOOKS IN POP SONG WRITING

5.1. CREATING *TIP TOE*

In 2014 the objective was set to compose an original pop song as a member of the duo 'Lacey May' for the purpose of this study. The musical work – titled *Tip Toe* – was composed with the aim of acquiring hit song status in the South African music market while serving as an experiment in the application of certain principles of gestalt theory in music during the composition phase. This was also an opportunity to practically attempt the implementation of the psychological concept of *expectation* in music to ascertain whether creating expectation in vocal melodies of pop music makes the piece of music catchy to the music consumer or listener.

Tip Toe was co-composed with a prominent South African songwriter and performer, Gavin Edwards, who has composed for international song writers as well as becoming a finalist on the popular television programs *South African Idols* and *The Voice South Africa*. Industry standard release procedures were considered and implemented, leading up to the single's announcement in February 2014 to ensure maximum exposure locally. Professional advice was given and followed by Universal Music Group South Africa and Universal Music Publishing South Africa (also drawing on 12 years of personal music industry experience) for all elements surrounding a commercial release, namely production, mixing, mastering, marketing, radio and television plugging, a music video, photo shoots and music publishing (see Appendix C). This was a digital release only because of budget constraints.

Tip Toe was playlisted in March 2014 on 21 national, commercial, community and internet radio stations, including (but not limited to) Jacaranda FM, Highveld Stereo, RSG, K-FM, Algoa FM, Tuks FM, Zone Radio and The Grind Radio, nationwide (see Appendix C). The single received 207 spins (plays) in total, with a reach of approximately 17.11 million listeners, according to the radio tracking system www.radiomonitor.com (2015). The music video was flighted (aired) on local television stations SABC 2, SABC 3, DMX, M-Net, M-Net HD as well as YouTube https://www.youtube.com/watch?v=TzkplVLPkrQ throughout 2014, 2015 and 2016. *Tip Toe* is available for download on iTunes and Apple music https://itunes.apple.com/za/artist/lacey-may/id526420042

While *Tip Toe* gained popularity, it was given 'medium' rotation on radio; that is, 10-25 spins (plays) per week. *Happy*, *Call Me, Maybe*, *Blurred Lines* and *Rolling in the Deep* all received high rotation on radio; that is, 20 or more spins per week, ultimately confirming their hit song status. Apart from the fact that the group Lacey May are relatively unknown, what elements prevented *Tip Toe* from becoming a hit? In the music publishing industry, it is said that 'a 'great' song will receive the recognition it deserves' [regardless of marketing].

It was recognised that *Tip Toe* would need to be analysed in the same manner as *Happy, Call Me, Maybe, Blurred Lines* and *Rolling in the Deep* to establish what essentially 'went wrong' in the composing and crafting of the musical work that prevented it from becoming a hit song in South Africa. Once the analysis was completed, a comparison was done to determine how pop song writing and the crafting of hooks to achieve catchiness and expectation should be improved.

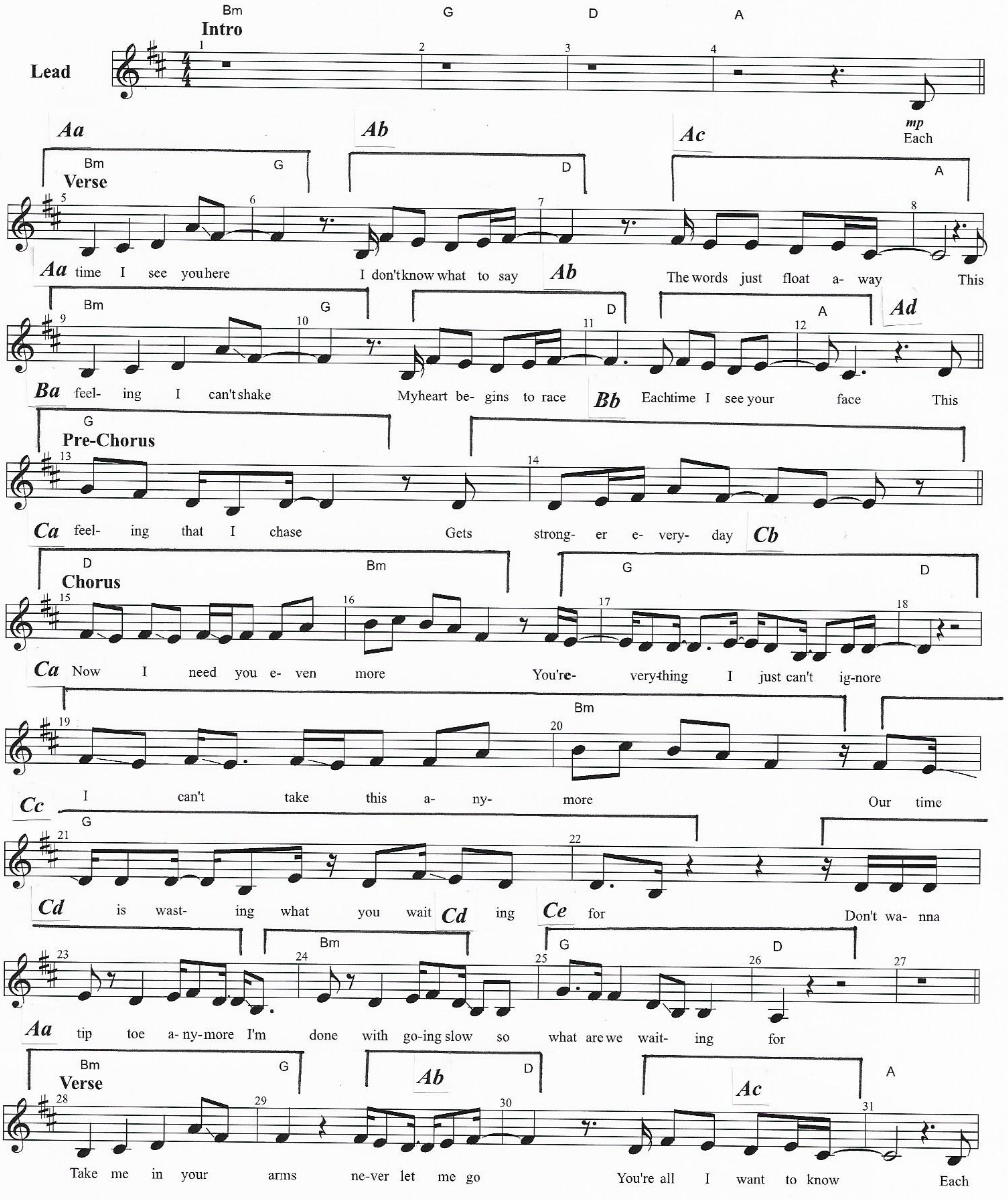
Tip Toe

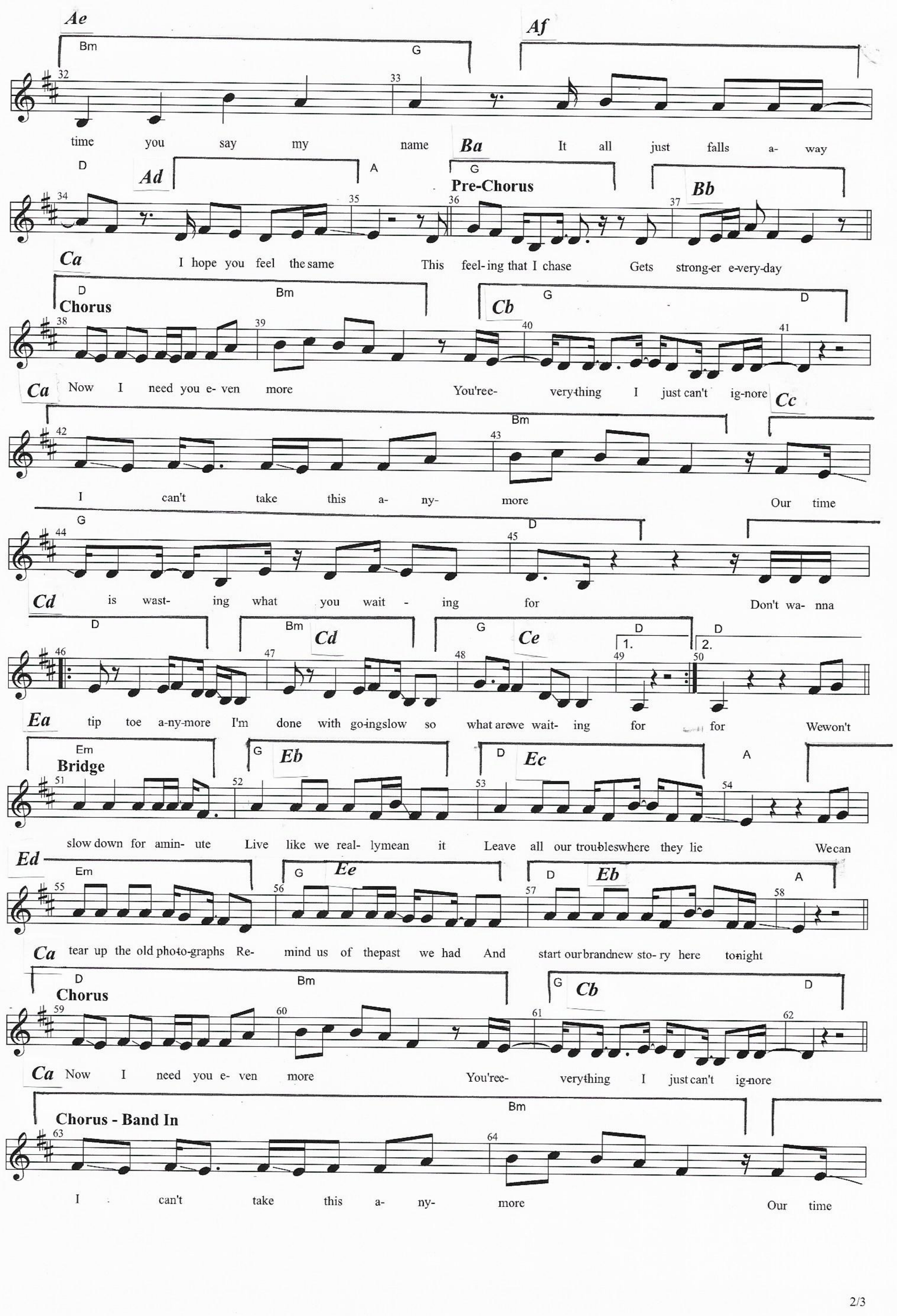
Lacey May

Words by Candice Armitage

Music by Kelly Grevler, Rob Visser, Gavin Edwards

♩ = 105


Intro
Lead
Bm G D A
mp
Each
Verse
Aa Ab Ac
Bm G D A
Aa time I see you here I don't know what to say Ab The words just float a- way This
Bm G D A Ad
Ba feel- ing I can't shake My heart be- gins to race Bb Each time I see your face This
Pre-Chorus
G
Ca feel- ing that I chase Gets strong- er e- very- day Cb
Chorus
D Bm G D
Ca Now I need you e- ven more You're- very-thing I just can't ig-nore
Bm
Cc I can't take this a- ny- more Our time
G
Cd is wast- ing what you wait Cd ing Ce for Don't wa- nna
Bm G D
Aa tip toe a- ny-more I'm done with go-ing slow so what are we wait- ing for
Verse
Bm G Ab D Ac A
Take me in your arms ne-ver let me go You're all I want to know Each


Ae
Bm
G
Af
time you say my name
Ba
It all just falls a- way
D
Ad
A
G
Pre-Chorus
Bb
Ca
I hope you feel the same
This feel- ing that I chase
Gets strong-er e-very-day
D
Bm
Chorus
Cb
G
D
Ca
Now I need you e- ven more
You're e- very thing I just can't ig-nore
Cc
Bm
I can't take this a- ny- more
Our time
G
D
Cd
is wast- ing what you wait - ing for
Don't wa- nna
D
Bm
Cd
G
Ce
D
1.
2.
D
Ea
tip toe a-ny-more I'm done with go-ing slow so what are we wait- ing for
for
We won't
Em
Bridge
G
Eb
D
Ec
A
slow down for a min- ute
Live like we real- ly mean it
Leave all our troubles where they lie
We can
Ed
Em
G
Ee
D
Eb
A
Ca
tear up the old photo-graphs Re- mind us of the past we had
And start our brand new sto- ry here to-night
D
Chorus
Bm
G
Cb
D
Ca
Now I need you e- ven more
You're e- very thing I just can't ig-nore
Chorus - Band In
Bm
I can't take this a- ny- more
Our time
2/3

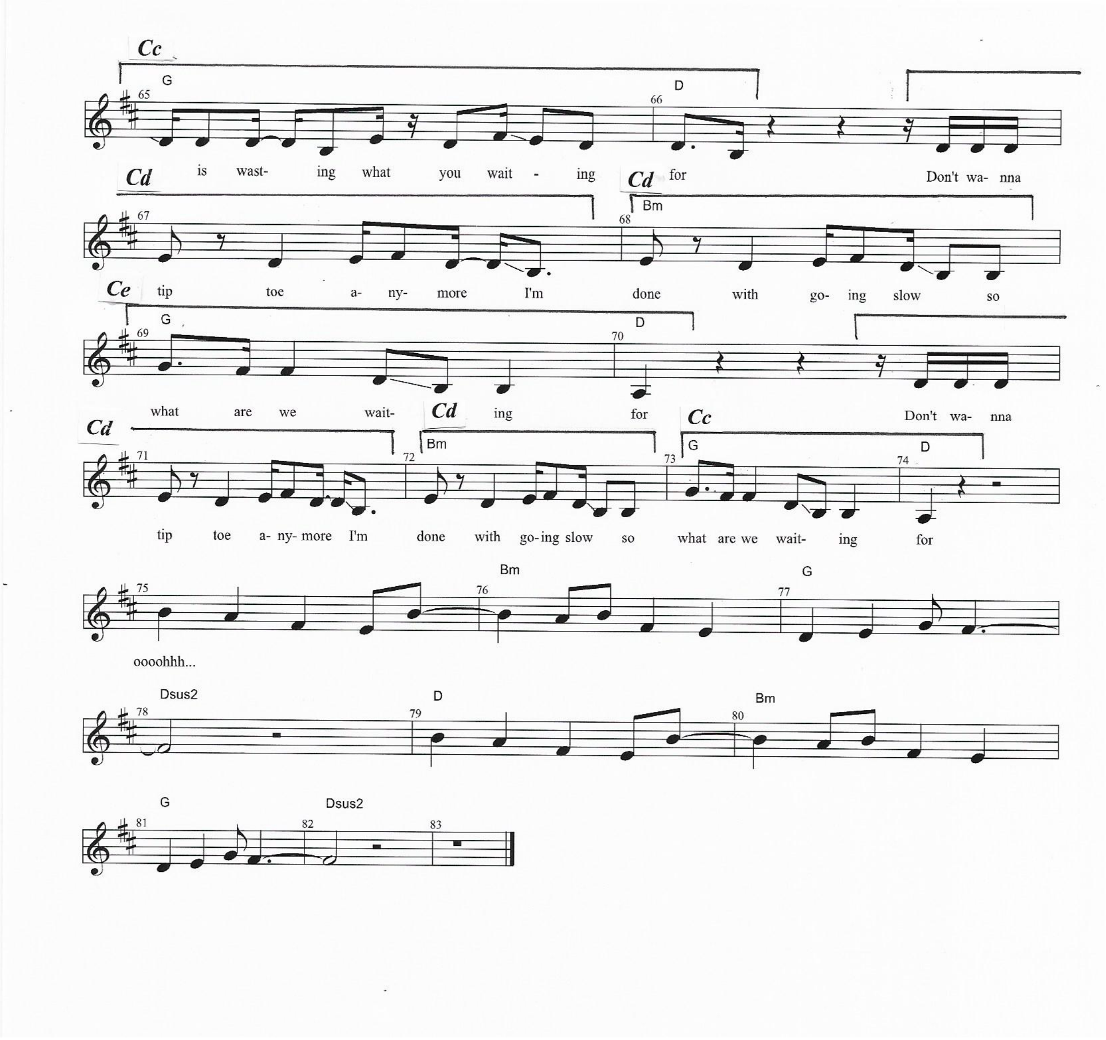

Cc
G
D
65
66
is wast- ing what you wait - ing for
Don't wa- nna
Cd
Cd
Bm
67
68
tip toe a- ny- more I'm done with go- ing slow so
Ce
G
D
69
70
what are we wait- ing for
Don't wa- nna
Cd
Cd
Cc
Bm
G
D
71
72
73
74
tip toe a- ny- more I'm done with go- ing slow so what are we wait- ing for
Bm
G
75
76
77
oooohhh...
Dsus2
D
Bm
78
79
80
G
Dsus2
81
82
83

Figure 4.5: *Tip Toe* (2014) by Lacey May

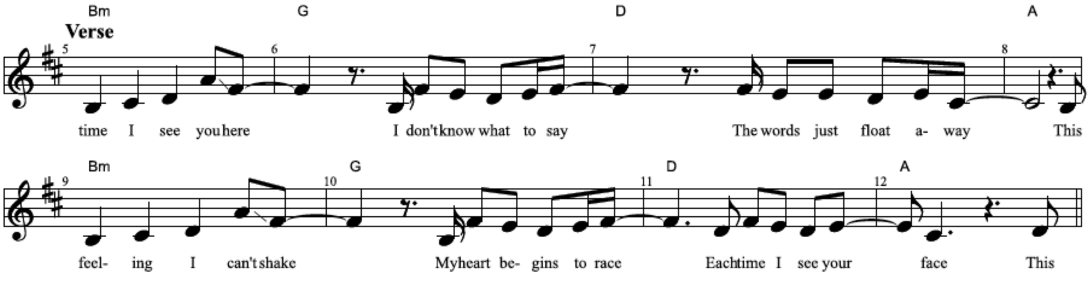

Bm
G
D
A
Verse
5
6
7
8
time I see you here
I don't know what to say
The words just float a- way
This
Bm
G
D
A
9
10
11
12
feel- ing I can't shake
My heart be- gins to race
Each time I see your
face
This

Figure 4.5.1: *A* Section (verse 1)

The verse section of *Tip Toe* is much like that of *Call Me, Maybe* and *Rolling in the Deep*, where each bar is a separate phrase labelled accordingly, and the vocal range is limited. For example; there are minor second, major second and minor third intervals throughout the verses. *Tip Toe* uses chord and scale tones within the key in ways very similar to the other four songs analysed, except that some of the other musical works display more ambiguity in the harmony (especially *Happy*, which moves between F and F minor). The lack of resolution we find in many of these songs is considered one of their most 'catchy' features. The other songs also use more chromatic notes than *Tip Toe*. The use of chromaticism lends a sense of the unpredictable or unexpected to the melodic writing and catches the listener's attention. I have found with *Tip Toe* that the key is very easily established, compared to the other songs analysed, thus the composers are not denying the listeners' expectation to the same extent as the other four compositions. For example: the third note of the vocal melody in the verse in bar 1 is a D note (the tonic). The previous four songs analysed do not present the tonic note early on in the verse or choruses.

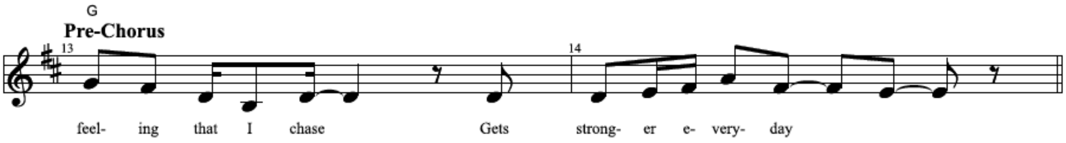


Figure 4.5.2: ***B*** **Section (Per Chorus)**

The phrases in the *B* section (although only 2 bars) resemble *Happy* in the way that the vocal melodies now extend over bar lines, implying a slightly 'longer' hook than in the verse section. For example, the 2nd phrase of the pre-chorus begins on the last offbeat of bar 13 and continues into bar 14. The small intervals present here are suggestive of the gestalt principle of continuity as there is a tendency to perceive the linear melody as 'continuing' its established direction.

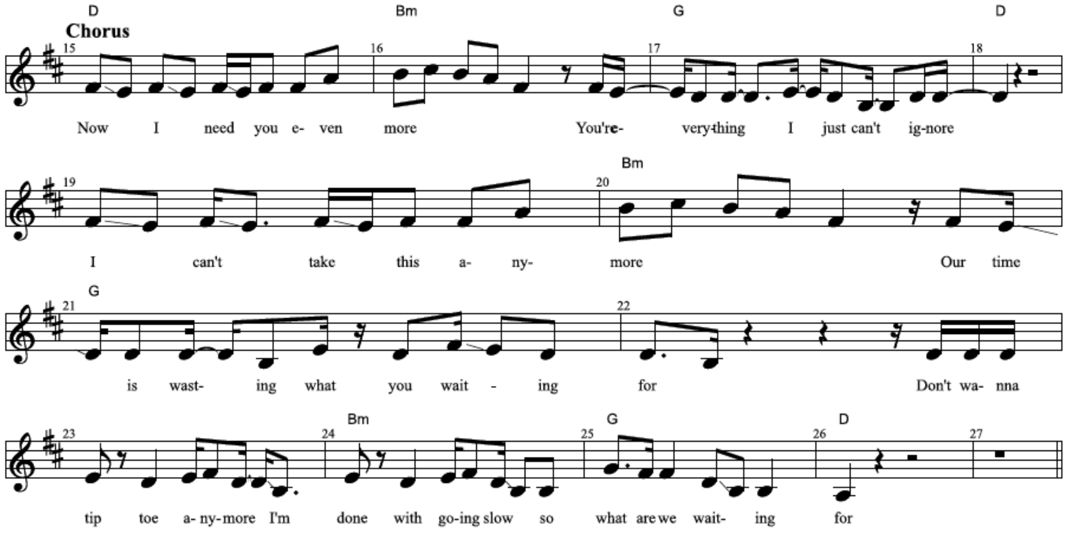

D
Bm
G
D
Chorus
15
16
17
18
Now I need you e- ven more You're- very-thing I just can't ig-nore
19
Bm
20
I can't take this a- ny- more Our time
G
21
22
is wast- ing what you wait - ing for Don't wa- nna
Bm
G
D
23
24
25
26
27
tip toe a- ny-more I'm done with go-ing slow so what are we wait- ing for

Figure 4.5.3: ***C*** **Section (Chorus)**

Throughout the *C* section, or chorus sections, the phrase melodies are constructed much like those of *Happy*, where the vocal melodies extend over bar lines (similar to the pre-chorus section). Although the extension of vocal melodies over the bar lines may not be a contributing factor in this analysis, it is interesting to note for the purpose of establishing the length of hooks. The question arises: are long hooks more effective than short hooks, or vice versa? This is beyond the scope of this project because it would require a larger sample set. The intervals throughout the chorus of *Tip Toe* are relatively small, with repetition. While composing this section of the work, the writers were aiming to attain the 'mere exposure effect'. This is a psychological phenomenon by which listeners are inclined to develop a preference for melody (and other elements) merely because they are familiar with them by the end of the piece of music or song (Zajonc 2001). In social psychology, this effect is sometimes called the familiarity principle, which strongly suggests the gestalt principle of similarity and alludes to Narmour's I-R model.

For example: the auditory system and the human brain can focus and identify a repetitive melody because, according to the principle of similarity, the human mind is constantly searching for patterns to ensure that not every melody or musical work we hear sounds 'brand new'. When we predict the melody or notes successfully, we will experience a feeling of reward and fulfilment, suggesting gestalt and the application of the I-R model. Predictability, an ability to participate in the repetition of a song, will also give a sense of fulfilment in the listener. However, if the musical work is too simple it may become ‘annoying’, and that is why *Tip Toe’s* chorus was composed with a certain amount of complexity. For example, the large interval present from bar 24–25 (minor 6 interval) to break the monotony of the small interval steps used.

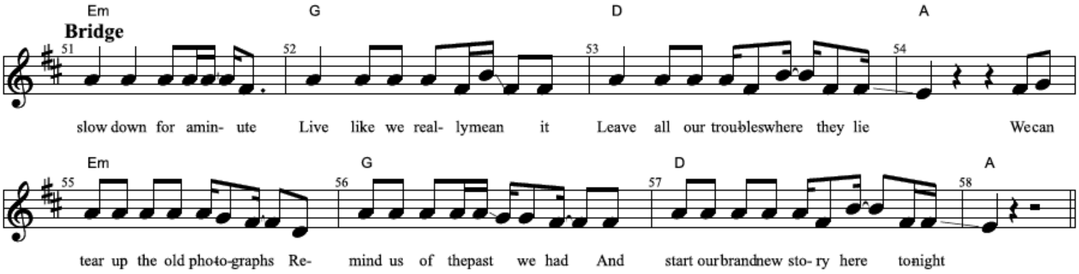

Em
G
D
A
Bridge
51
52
53
54
slow down for amin- ute Live like we real- lymean it Leave all our troubleswhere they lie Wecan
Em
G
D
A
55
56
57
58
tear up the old photo-graphs Re- mind us of thepast we had And start ourbrandnew sto- ry here tonight

Figure 4.5.4: ***D*** **Section (Bridge)**

The bridge section, much like the verse and chorus sections, displays small intervals and repetition. The tonic note D is only present once in the *D* section in bar 55. This is significant, as the other song sections of *Tip Toe* present the tonic note within the first few bars of each section. Much like *Call Me, Maybe*, each vocal phrase is one bar in length.

Harmonic Analysis (implications from melody)

The chords selected for *Tip Toe* were B minor, G, D, A and E minor. The verses display a vi – IV – I – V chord progression. Although in the key of D, the chords and melody begin on the 6th degree of the scale as beginning on the tonic would sound uninteresting. The harmony in the chorus section firmly establishes the key of the song beginning with a D triad, I – vi – IV – I. The chorus section does not deny the listeners’ expectation to the same degree as the previous four songs analysed. However, the chord progression in the bridge section begins on the 2nd degree of the scale – the Em chord – and ends on the V (A major chord), which denies our expectation slightly and prepares the listener for a successful prediction of the chorus that follows the bridge beginning on the I chord. The complexity of the harmony is a factor, as the other songs analysed use 7th chords and unusual harmonies with chromatic notes.

Summary and Conclusions

The analysis in this chapter suggests that the core reason as to why the musical work *Tip Toe* did not acquire hit song status in the South Africa music market is that the composition fulfils the listeners' expectations too frequently, in other words: it was *too* predictable in its harmonic and melodic implications. Expectation in *Happy*, *Call Me, Maybe*, *Blurred Lines* and *Rolling in the Deep* was continually denied, thus providing evidence that the gestalt principle of closure should be violated to a certain degree in twenty-first-century hit pop songs to keep the listener 'coming back for more'. As composers, we have realised that simple, repetitive melodies alone cannot elevate a pop composition to hit song status. Each note of the vocal melody should be chosen more carefully and deny the expectation of the listener until the end of each vocal phrase, for example. An additional external factor of the seemingly 'failed' hit song could also be the lack of marketing and the fact that the group Lacey May is relatively unknown in the South African music market. However, because of the limited scope of this study, marketing will not be addressed further.

The main common compositional element observed that the four hit songs share is that the key of each work cannot be immediately firmly established. In the case of *Tip Toe*, the key can be established very early on, i.e. that the song is in the key of D major. I believe this may be the first compositional error, because it fulfils the listener's expectation almost immediately, so the listener may not return for more. The gestalt principle of closure is realised early on and the expectation of the listener is not violated, making the song less catchy than the previous four hit songs analysed. The analysis below demonstrates a breakdown of the sections of *Tip Toe* by way of a note-to-note analysis of each section and a discussion of gestalt principles.

The fact that there is no modulation or change of key suggests that the harmony, and, by implication, the melody, does not surprise the listener or create expectation of closure or return in the same way as the others. In the four hit songs analysed, there is the use of syncopation or off-beat accents that gives momentum and drive to the melody. I believe that production value is a large contributing factor in hit song composition, as are other elements such as timbre. Another important factor that is beyond the scope of this study is vocal timbre. The hit pop songs by Adele and Pharrell Williams are made popular not only by the features of melodic expectation, or compositional elements, but also by the distinctive voice qualities of their singers.

CHAPTER 6

EXPERIMENTAL DESIGN AND RESULTS

Throughout this study I focused on analysis that assumes that listeners respond to expectation and other factors according to the theories of Meyer, Narmour, Krumhansl, Huron, and the gestalt theorists. But to really know how listeners respond, I decided to match the analytical findings to listener responses to each of the same songs analysed in the preceding chapters. This offers a useful method of comparison and is a control on my findings.

6.1. PURPOSE

The purpose of this experiment was to establish whether the majority of music listeners experience hooks and catchiness in the same or similar ways. When this data displays a positive result, i.e. music listeners *are* experiencing hooks in similar ways, we can begin to isolate those sections that are found to be the most memorable to undergo further analysis.

6.2. METHOD

The method I used was a digital survey. This method was chosen for its efficiency and accuracy of automatically calculating the results, ultimately saving time, as response time is almost instant. Selecting the online survey method for this study reduced my research costs and assisted with quick analysis that I could access at any time from anywhere. This was also a convenient method for the participants, as they could participate from anywhere and the survey could reach a wider and more varied demographic. The experiment was designed on the video sharing website YouTube in the form of a five-song playlist. The playlist included the songs *Happy, Call Me, Maybe, Blurred Lines, Rolling in the Deep and Tip Toe*. YouTube has strict copyright control policies, therefore the playlist was uploaded with the privacy option set as 'unlisted'. This means that the general public would not have access to this playlist unless they had direct access to the unique URL link, ultimately making this experiment more controlled than that of the pilot study attempted on SoundCloud in 2015. YouTube did, however, pick up copyright infringement, but I provided a disclaimer in the description section of each video stating that I did not own the copyright in these musical works. The local music publishers that share the copyright in these songs provided verbal consent telephonically in 2015 for the use of these songs for educational purposes only.

The audio of each song was synchronised to a text indicating the *sections* of each song. In other words, the visuals would show the word “Verse” throughout the duration of the verse section, “Chorus” throughout the chorus sections and so on. This allowed the listener/participant (musically or not musically trained) to understand the form of each song without having to conduct their own analysis. It also standardised the rubric for the survey so that listeners were able to make judgements accordingly.

The participants who agreed to participate in this research were contacted via email and sent the relevant information and the private links to the playlist as well as the survey questionnaire. The YouTube playlist takes the listener/participant 17 minutes and 52 seconds to complete and the online survey questionnaire (www.survyplanet.com) takes approximately four minutes to complete, thus making the total time taken for each participant to complete this research about 22 minutes. Thirty-five people participated in this survey. The online survey questionnaire contains 26 multiple choice questions concerning each song and is completely anonymous. No personal information was collected by the researcher. Participants were asked a series of questions pertaining to their opinions regarding the catchiest sections of each song as well as their personal experience of catchiness within these works.

I selected these specific questions to best establish which sections of each song chosen for this study (i.e. verse, chorus, bridge, etc.) the participants of the survey found the catchiest. The findings would therefore reinforce my own assumptions of the link between the hooks in vocal melody and catchiness in twenty-first-century pop music.

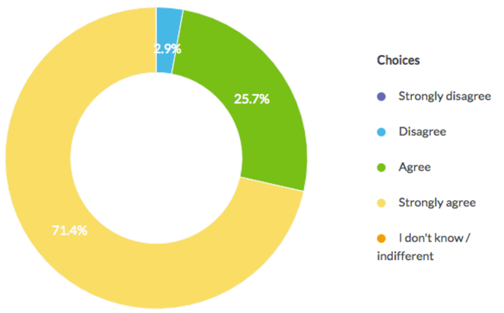
6.3. RESULTS: HAPPY

In response to the five survey questions relating to the song *Happy* – (question 1), 71.4% of participants *strongly agreed* that when listening to the song as a 'whole' it was overall a catchy song, 25.7% of participants *agreed* with this sentiment and 2.9% *disagreed*. When isolating the first section of the song (the verse) and asking the same question (question 2), 70.6% *agreed* that they found the verse of *Happy* catchy, 17.6% *strongly agreed* with this, 5.9% *disagreed*, 2.9% *strongly disagreed* and 2.9% felt *indifferent*.

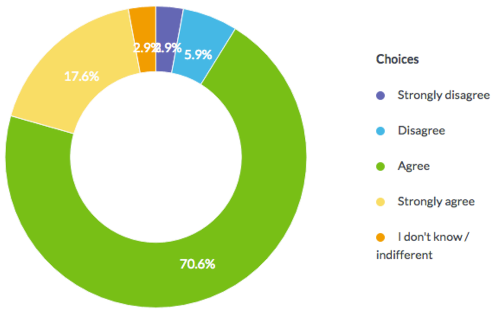
When asked about experiencing catchiness in the chorus of the song (question 3) – 77.1% *strongly agreed*, 14.3% *agreed*, 5.7% *strongly disagreed* and 2.9% *disagreed*. The results thus far showed that most participants agreed that *Happy* was a catchy song and agreed that the verse was catchier than the chorus, as seen in (question 4) – 57% *agreed*, 34.3% *strongly agreed* while 8.6% *disagreed*.

When asked how the participants felt about the catchiness of the vocal melodies of *Happy* (question 5), 48.6% *agreed* that the vocal melodies were catchy, 40% *strongly agreed*, 8.6% *disagreed* that the vocal melodies were catchy and 2.9% felt *indifferent*.

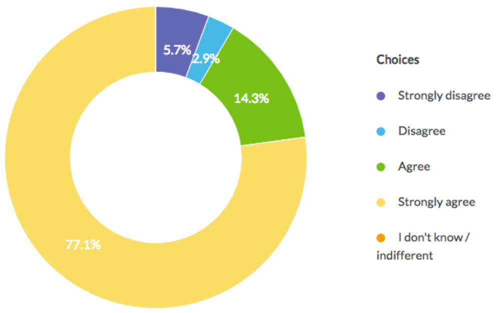
Q1 On the whole, I find 'Happy' a catchy song
Multiple Choice



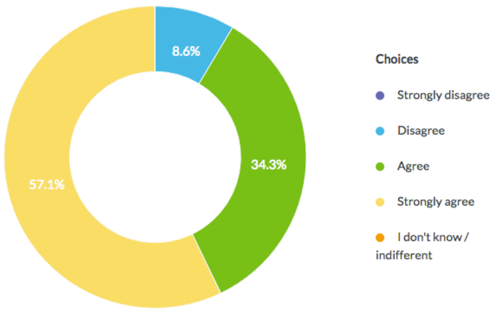
Q2 On the whole, I find the verses of 'Happy' catchy
Multiple Choice



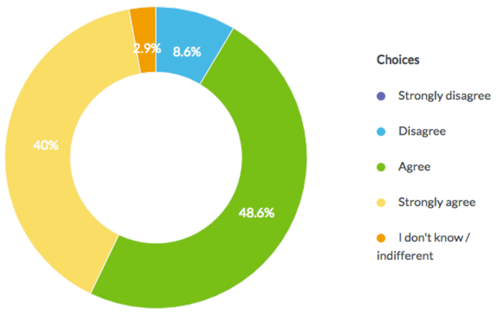
Q3 On the whole, I find the chorus of 'Happy' catchy
Multiple Choice



Q4 I find the chorus section of 'Happy' catchier than the verse
Multiple Choice



Q5 I find the vocal melodies of 'Happy' catchy
Multiple Choice



In conclusion, 52.66% *strongly agreed* that they experienced catchiness while listening to *Happy*, 38.66% *agreed*, while 5.78% *disagreed*. Thus, the majority of participants *strongly agreed* to experiencing catchiness while listening to *Happy*, 1.72% *strongly disagreed* that this song encompasses catchiness, while 1.16% were *indifferent.* Thus, on average 91.32% of participants experienced catchiness within this composition.

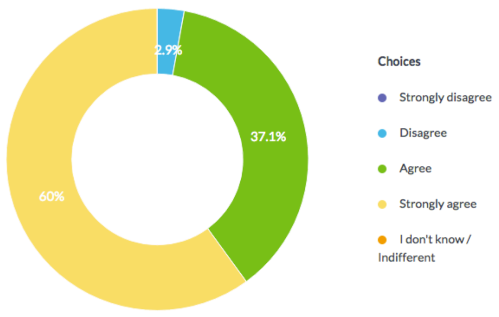
The positive results for catchiness in *Happy* show that most listeners experience catchiness in similar or even identical ways. This reinforces the aim of this dissertation to identify patterns in the vocal melodies of twenty-first-century hit pop songs. *Happy* conforms to the gestalt principles of similarity, proximity, and closure. Principles of Narmour's I-R model apply to the vocal melodies of this work, namely intervallic difference, registral direction and proximity, thus suggesting melodic perception and cognition can be based on the theory that the participant has formed expectations about how these melodies will continue. These results confirm that the emotions a listener experiences are aroused by specific musical patterns correlated with expectation. The ambiguity of the key in *Happy* denies the listeners' expectations, ultimately making them come back for more and thus making the song 'catchy'.

Call Me, Maybe

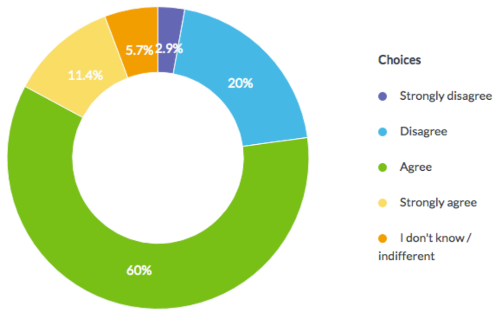
Call Me, Maybe was analysed in the same way. Sixty per cent of participants *strongly agreed* that on the whole *Call Me, Maybe* was a catchy song, 31.7% *agreed,* while 2.9% *disagreed*. Sixty per cent of participates *agreed* that the verse section was catchy, 11.4% *strongly agreed*, 20% *disagreed*, 5.7% were *indifferent* and 2.9% *strongly disagreed*. Catchiness in the chorus section of *Call Me, Maybe* was experienced by all the participants, with 77.1% that *agreed* and 22.9% *strongly agreed*.

Of the participants, 68.6% *strongly agreed* that the chorus section was catchier than the verse, 22.9% *agreed*, 5.7% *disagreed* and 2.9% felt *indifferent.* Of the participants, 54.3% *agreed* that the vocal melody of *Call Me, Maybe* was catchy, 34.3% *strongly agreed* and 11.4% *disagreed*, as they did not find the vocal melodies catchy.

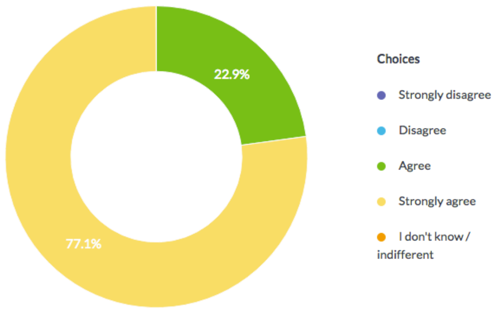
Q6 On the whole, I find 'Call Me, Maybe' a catchy song
Multiple Choice



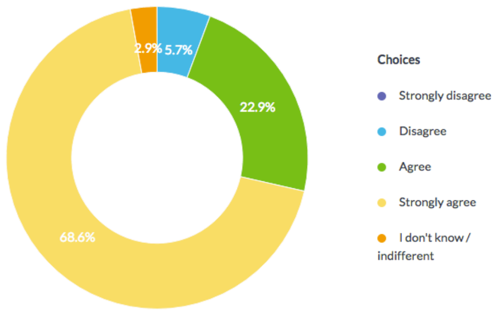
Q7 On the whole, I find the verses of 'Call Me, Maybe' catchy
Multiple Choice



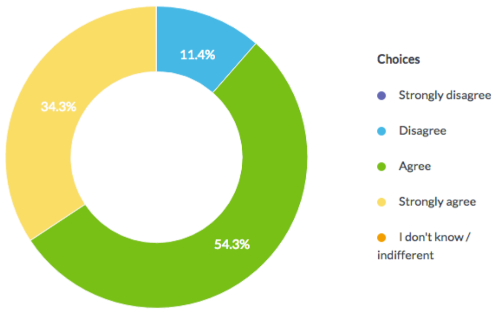
Q8 On the whole, I find the chorus of 'Call Me, Maybe' catchy
Multiple Choice



Q9 I find the chorus section of 'Call Me. Maybe' catchier than the verse
Multiple Choice



Q10 I find the vocal melodies of 'Call Me, Maybe' catchy
Multiple Choice



In conclusion, 49.88% of the participants who listened to *Call Me, Maybe strongly agreed* to experiencing catchiness within the song; 39.44% *agreed*, 8% *disagreed* to experiencing catchiness, 0,58% *strongly disagreed* and 1.72% were *indifferent*. Thus 89.32% of participants listening to *Call Me, Maybe* disclosed that they experienced catchiness within this composition.

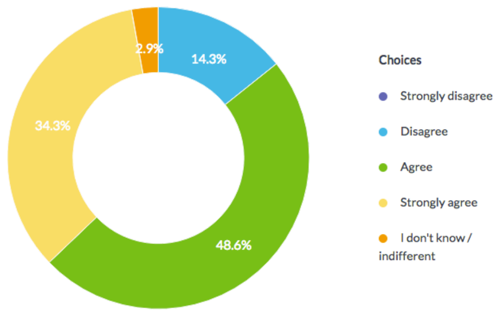
The positive results for this musical work strongly confirm that the majority of listeners experienced catchiness in the same or similar ways while listening to *Call Me, Maybe*. These results conform to the previous discussion of gestalt theory, and the hypotheses of Meyer (1956), Narmour (1990), and Krumhansl (2000b). *Call Me, Maybe* conforms to the gestalt principles of proximity, similarity and closure and also to concepts of the I-R model. Here the listeners' expectation is denied until the last note of most bars, where the phrases resolve to what has been established as the tonic, with shorter vocal melodies per phrase.

Rolling in the Deep

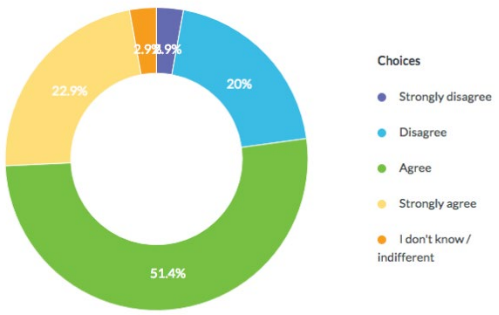
Listening to *Rolling in the Deep¸* 48.6% of participants*, agreed* that, as a whole, it was a catchy song; 34.3% *strongly agreed*, 14.3% *disagreed*, while 2.9% felt *indifferent*.

The catchiness in the verses was experienced by 51.4% of participants who *agreed*, 22.9% *strongly agreed*, 20% *disagreed*, 2.9% *strongly disagreed* and 2.9% felt *indifferent*. The chorus section had 54.3% of participants who *strongly agreed* to experiencing catchiness, 40% *agreed* and 5.7% *disagreed.* Regarding the chorus section of *Rolling in the Deep*, 42.9% of participants *agreed* that it was catchier than the verse; 34.3% *strongly agreed* with this sentiment, 14.3% expressed that they felt *indifferent* about the catchiness of the two sections and 8.6% *disagreed* that the chorus was catchier than the verse. Regarding the vocal melody's catchiness, both 42.9% of participants *strongly agreed,* 42.9% *agreed*, 8.6% *disagreed* that the vocal melodies were catchy and 5.7% were *indifferent*.

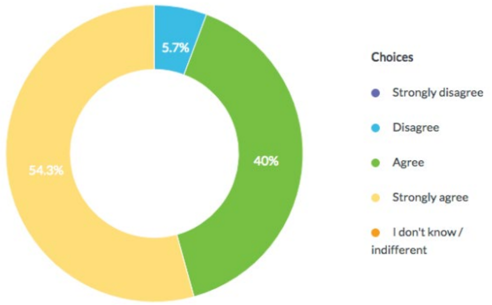
Q11 On the whole, I find 'Rolling in the Deep' a catchy song
Multiple Choice



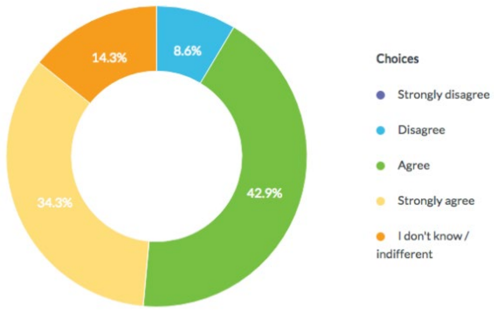
Q12 On the whole, I find the verses of 'Rolling in the Deep' catchy
Multiple Choice



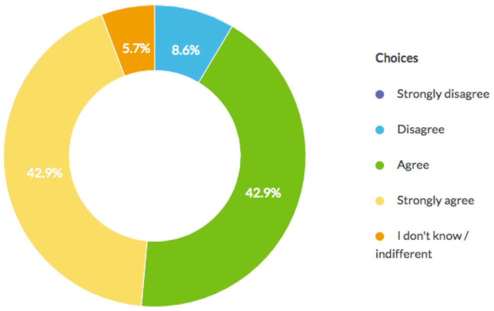
Q13 On the whole, I find the chorus of 'Rolling in the Deep' catchy
Multiple Choice



Q14 I find the chorus section of 'Rolling in the Deep' catchier than the verse
Multiple Choice



Q15 I find the vocal melodies of 'Rolling in the Deep' catchy
Multiple Choice



From the results above, it can be concluded that 45.16% of participants *agreed* that they experienced catchiness while listening to *Rolling in The Deep,* 37.68% *strongly agreed*, 11.44% *disagreed,* 5.16% were *indifferent* and 0.58% *strongly disagreed* that they experienced catchiness. Thus overall, 82.84% of participants revealed that they experienced catchiness while listening to *Rolling in the Deep*.

These positive results for *Rolling in the Deep* show that most listeners experience catchiness in the same or similar ways while listening to this song. This confirms the hypothesis of this dissertation by identifying patterns in the vocal melodies of twenty-first-century hit pop songs. The gestalt principle of closure is experienced throughout this musical work, in the sense that closure is not achieved as the vocal phrases do not end on the tonic note. The listeners' / participants' expectation is continually denied here, thus building tension within this work and ultimately keeping the listener in suspense. This makes the composition catchy and the listener essentially *comes back for more.*

Blurred Lines

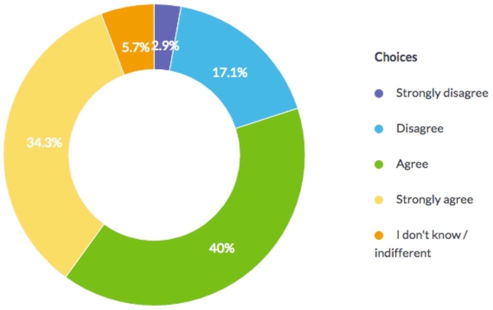
On the whole, 40% of participants who listened to *Blurred Lines agreed* that it was catchy, 34.3% *strongly agreed*, 17.1% *disagreed,* 5.7% felt *indifferent* and 2.9% *strongly disagreed.* Forty per cent of participants *agreed* that the verse was catchy, 22,9% *strongly agreed,* 22.9% *disagreed,* 8.6% felt *indifferent* and 5.7% *strongly disagreed.*

Regarding the chorus, 48.6% *agreed* that the chorus was catchy, 31.4% *strongly agreed,* 14.3% *disagreed*, while 5.7% *strongly disagreed*. Establishing whether the chorus was catchier than the verse reveals that 29.4% *strongly agreed,* 26.5% *agreed,* 23.5 *disagreed,* 11.8% *felt indifferent,* and 8.8% *strongly disagreed.*

In relation to the vocal melodies, 62.9% of participants *agreed* that the vocal melodies of *Blurred Lines* were catchy, 17.1% *strongly agreed,* 14.3% *disagreed* and 5.7% *strongly disagreed.*

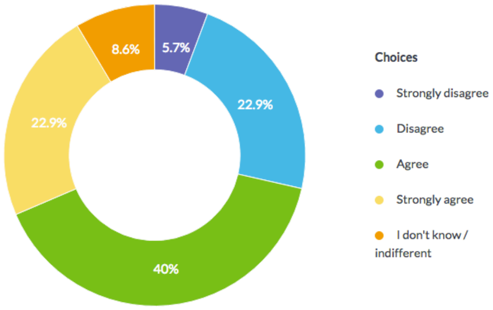
Q16 On the whole, I find 'Blurred Lines' a catchy song

Multiple Choice



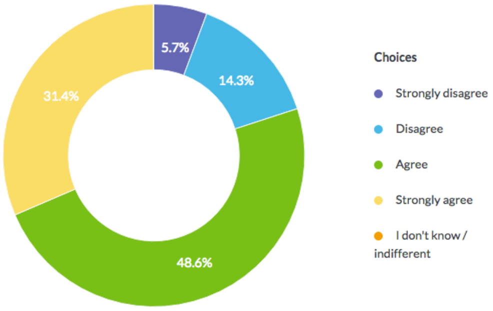
Q17 On the whole, I find the verses of 'Blurred Lines' catchy

Multiple Choice



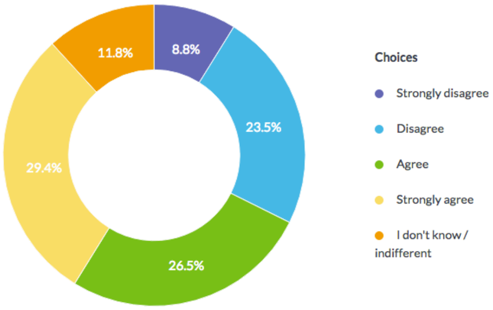
Q18 On the whole, I find the chorus of 'Blurred Lines' catchy

Multiple Choice



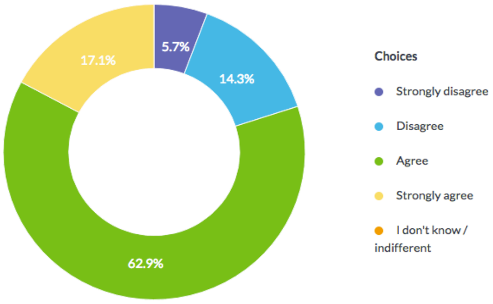
Q19 I find the chorus section of 'Blurred Lines' catchier than the verse

Multiple Choice



Q20 I find the vocal melodies of 'Blurred Lines' catchy

Multiple Choice



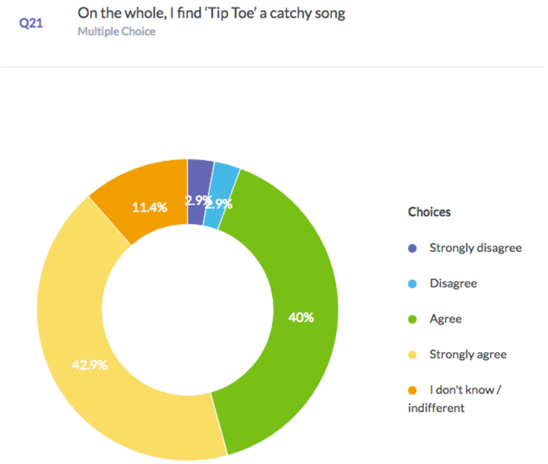
To conclude – overall, 43% of participants *agreed* that they experienced catchiness when listening to *Blurred Lines*, 27% *strongly agreed,* 18.42% *disagreed* to experiencing catchiness, 8.6% *strongly disagreed* and 5.12% felt *indifferent.* Thus, on average 70% of participants experienced catchiness within this composition.

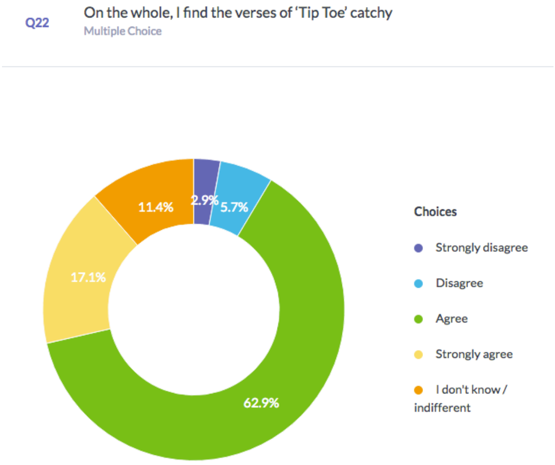
The positive results for *Blurred Lines* seem to be lower than for *Happy, Call Me, Maybe* and *Rolling in the Deep* but still show that most music listeners experience catchiness in the same or similar ways while listening to this work. *Blurred Lines* is ambiguous, and the tonality is unresolved. The lack of closure prevents the listeners' sense of resolution and heightens listener expectation. This composition does conform to gestalt principles as well as concepts of the I-R model but to a lesser extent when compared to the other works analysed. The vocal melodies are not as structured when compared to the other pop songs analysed, perhaps making it slightly less appealing in terms of catchiness.

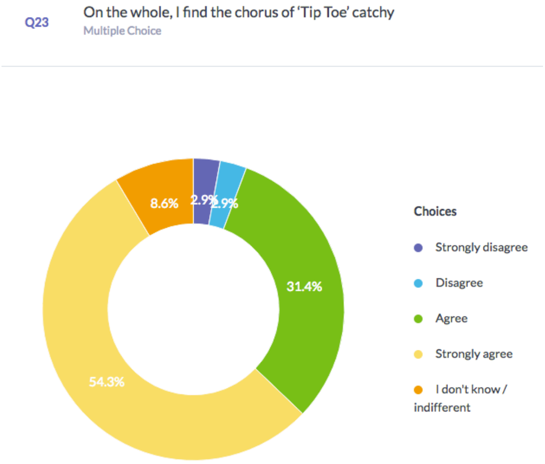
Tip Toe

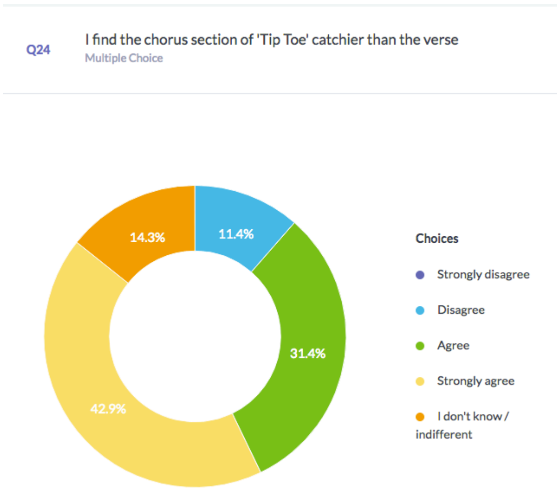
The four songs analysed above are all well-known hits and it can be assumed that the participants have more than likely heard at least one of these international commercial hit songs once since their release. *Tip Toe*, on the other hand, is a local release and participants may not have listened to this particular work before. *Tip Toe* was composed for the purpose of acquiring hit song status using gestalt principles. Analysis may reveal why this musical work failed to acquire hit song status on South African charts according to the feedback of participants. On the whole, 42.9% of participants *strongly agreed* that *Tip Toe* was a catchy song, 40% of participants *agreed*, 11.4% felt *indifferent*, 2.9% *disagreed* and 2.9% *strongly disagreed.* Regarding the verses, 62.9% *agreed* that the verses were catchy, 17.1% *strongly agreed* and 11.4% were *indifferent*, 5.7 *disagreed* and 2.9% *strongly disagreed*. Regarding the choruses, 54.3% of participants *strongly agreed* that the choruses of *Tip Toe* were catchy, 31.4% *agreed*, 8.6% were *indifferent*, 2.9% of participants *disagreed* that they experienced catchiness within the chorus of this work and 2.9% *strongly disagreed.* Of the participants, 42.9% *strongly agreed* that the chorus section was catchier than the verse section and 31.4% *agreed,* 14.3% felt *indifferent* and 11.4% *disagreed*.

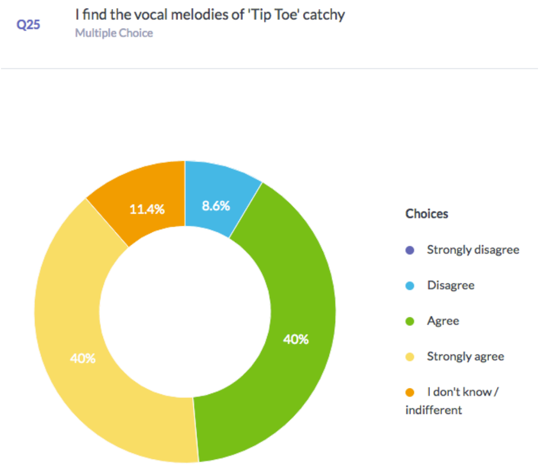
In terms of the vocal melodies, 40% of participants *strongly agreed* and 40% *agreed* that the vocal melodies of *Tip Toe* were catchy, while 11.4% felt *indifferent* and 8.6% *disagreed* with this sentiment.


Q21 On the whole, I find 'Tip Toe' a catchy song
Multiple Choice


Q22 On the whole, I find the verses of 'Tip Toe' catchy
Multiple Choice


Q23 On the whole, I find the chorus of 'Tip Toe' catchy
Multiple Choice

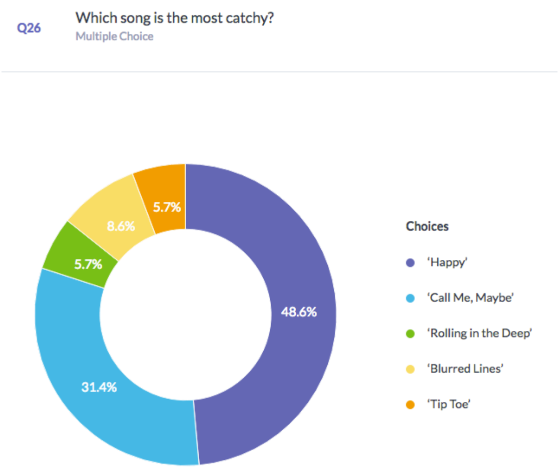

Q24 I find the chorus section of 'Tip Toe' catchier than the verse
Multiple Choice


Q25 I find the vocal melodies of 'Tip Toe' catchy
Multiple Choice

Thus, in conclusion, 39.44% of participants *strongly agreed* that they experienced catchiness while listening to *Tip Toe*, 41,14% *agreed,* 6.3% *disagreed* that they experienced catchiness, 11.42% were *indifferent* and 1.74% *strongly disagreed*.

Overall, 80.58% of participants conveyed they had experienced catchiness at some point within this composition. From these results it can be established that *Tip Toe* was not reported to be the least catchy song of this survey, even without it being at number one on the local music charts.

To summarise: 91.32% of participants experienced catchiness within the musical work of *Happy*, 89.32% in *Call Me, Maybe*, 82.84% in *Rolling in the Deep*, 70% in *Blurred Lines* and 80.58% in *Tip Toe*. When asked which song the participants found the catchiest of the five songs that where listened to, *Happy* was found to be the catchiest by 48.6%, *Call Me, Maybe* was second at 31.4%, *Blurred Lines* with 8.6% and *Rolling in the Deep* and *Tip Toe* were tied, both with 5.7% respectively.



From this data we can establish that some sections of the songs analysed are more catchy than others in the hooks they display. For instance, hooks are more prevalent in the chorus sections of each work, perhaps because of the repetition factor of the choruses throughout these hit pop songs. The fact that the song titles of the four hit hop songs analysed are also the main lyrics of the hooks of each chorus influences the listener's memory, as studies have indicated that *text* (in this case, the song title) that is linked to melody is more memorable. The case studies in this dissertation show that composers of hit pop songs focus their efforts on creating catchier melodies in the chorus sections of the songs, as compared with the verse and bridge sections.

CHAPTER 7
SUMMARY AND CONCLUSION

The idea for this study came about while driving in my car listening to a commercial, local radio station and wondering why it was that some pop songs become number one hits while others do not. I began thinking about the general radio listeners' behaviour towards these hit pop songs and asked myself why music listeners keep coming back to the same song and why millions of people have similar experiences with these hits. I began investigating the answers to this broad question while completing my BA Honours Degree in 2012. The practical section of my 2012 study attempted to *break* my own commercial pop songs by the band Lacey May into the pop music market in South Africa. From this 2012 study, important questions arose that guided the current study and analysis: What is it about songs like these that makes you listen again and again? Are there distinctive features to melodic hooks in twenty-first-century popular songs? Why are these features catchy or memorable? What constitutes *catchiness* in pop music? Do melodic hooks in popular song conform to gestalt principles? What salient features of melody do these songs have in common? What necessary features can we identify in the vocal melodies of these hit songs? Does expectation, as defined in this dissertation, conform to gestalt principles, and if so, how? To investigate these questions, I adopted a case study approach that focused on four hit pop songs and one of my own compositions. The study focused specifically on vocal rather than instrumental melody. The melody is what you hum to yourself and it is what you recall from your favourite song. The hypothesis tested in this dissertation was that the sense of musical expectation created by the vocal melody plays a key role in the catchiness levels of a pop song.

This study focused on key concepts of *melody*, *hooks*, *catchiness*, and *expectation* as defined in Chapter 1. In this chapter, I explore how Leonard Meyer (1956), Eugene Narmour (1990), and Carol Krumhansl (2000a) demonstrate the same principle for pitch in music. This was the starting point to establish what makes some songs 'catchier' than others. I also touch on how biologically the combination of rhythm, pitch, and timbre from audio stimuli have maximum effects on brainwave frequency. In my analysis and experiment I show that an important characteristic of catchiness is expectation, as defined by Narmour. For a song to be considered catchy, it must contain vocal hooks that create a sense of expectation on the part of the listener.

I have discovered through Meyer (1956) that the emotions a listener experiences transpire through the cognitive development of music's recognised patterns. Meyer demonstrates his theory with an analytical system based in psychological principles and from this we conclude that an expectation is a combination of comprehensive perceptual philosophies, which have been examined in the field of gestalt psychology. I have discovered the development of these ideas as Eugene Narmour extended Meyer's ideas in his literature on melody (Narmour 1990, 1992). Narmour's implication-realisation (I-R) theory categorises melodic sections based on interval size and direction and hypothesised the expectancy of each segment by directly allocating a prediction of expectedness to each occurrence. Narmour's theory of melody has been tested by several scholars (Krumhansl, 2000b; Schellenberg, 1996). Krumhansl demonstrates that musical expectation plays a vital role in the behaviours of the listener that include perception, speech understanding and production, and skilled performance (Krumhansl 2000b: 57).

My current analysis is directed at identifying patterns in the vocal melodies and explaining why they are catchy in terms of cognitive principles. More specifically, the analysis of vocal melody in pop music using the concept of gestalt practices, and the work of Meyer (1956) and Narmour (1990) suggests that the perceptual principle of expectation contributes greatly to the experience of catchiness in popular music of the twenty-first century.

In Chapter 2, I explained how the cognitive music theory of the Penn School (Gjerdingen 1999) and additional literature in the cognitive neuroscience of memory and melody contribute to the concept of expectation. I drew on my own background in song writing and discussed principles relating to the construction of musical hooks and the other elements involved in popular music today. Addressing hook writing principles assisted with understanding the concepts of their construction, leading this study to better describe and identify the phenomenon of catchiness. I used hook-writing techniques in my own pop composition, *Tip Toe*, included in this study. The techniques I used, in their most primitive form, were that of crafting brief melodic hooks with simple rhythms and an attractive succession of pitches. This approach to pop song composition seemed vague and broad, and so the aim of this dissertation was to identify patterns in the vocal melodies of twenty-first-century hit pop songs using a selection of songs from the Billboard Hot 100 pop chart. The aim was to explain why these songs are catchy in terms of cognitive and psychological principles.

Basic music psychology, expectation, melody and catchiness were discussed in Chapter 3. I focused on the important work of Meyer (1956), Krumhansl (2000a, 2000b), Huron (2006) and Narmour (1979, 1990, 1992, 2015). These scholars have demonstrated that pitch and melody are linked to expectation in important ways. By playing with combinations of pitch and rhythm that are trained to our inherent and learned capacities for entrainment, Narmour and Krumhansl suggest that analysing melodies on a note-to-note level explains aspects of musical expectation. Thus, I employed this note-to note approach to analyse the vocal melodies of four hit pop songs to establish what makes some songs catchier than others. I considered Meyer's (1956) use of gestalt principles to explain the existence of emotion in music. Meyer showed that "affect or emotion-felt is aroused when an expectation – a tendency to respond – activated by the musical stimulus situation, is temporarily inhibited or permanently blocked" (Meyer 1956:31). This informed my hypothesis. I consulted the work of Krumhansl (2000b), who suggests that the cognition of melodies can be described as successive points of closure, implication, and realisation. Closure and implication have opposite effects on expectancy for melodic continuation (Krumhansl 2000b, 61). The work of Narmour's (1990) I-R model suggests that perception of melodic structure is constructed by our ability to detect melodic implications. In the absence of melodic implication, the melody will be perceived as having closure. And lastly, I considered Huron's (2006) ITPRA theory that demonstrates the psychological processes involved in expectation that are designed to account “for the many emotion-related elements of expectation” (Huron 2006:3).

In Chapter 4, I examined musical expectation in vocal melodies of the twenty-first century, including four number one hits on the Billboard Hot 100 chart that were chosen as case studies for this research. namely *Happy* (2013) by Pharrell Williams*,* *Call Me, Maybe* (2012) by Carly Rae Jepsen *,* *Blurred Lines* (2013) by Robin Thicke, T.I. and Pharrell William, and *Rolling in the Deep* (2011) by Adele. Meyer’s (1956) general theory of expectation was used as a basis for studying the play of expectation as the key factor in accounting for hooks in vocal pop music, and these four musical works in particular.

Melodic analysis was the focus of Chapter 4 and discussed in detail on a note-to-note level. I transcribed and analysed the four hit pop songs, and my own song, *Tip Toe* (discussed in detail in Chapter 5), using the conceptual tools of gestalt theory. In this analysis I combined gestalt theory with the concepts of the I-R model, since the I-R model uses gestalt concepts. This demonstrated gestalt shifts and revealed that catchiness in the hooks of vocal melodies of twenty-first-century pop music is linked to the psychological phenomenon of expectation. For example: in my analysis I demonstrated how the individual phrases fit together, how listeners experience these phrases, and how ‘hooks’ conform to gestalt principles and elements of the I-R model.

My analysis began with full transcriptions of each pop song (Appendix A), with each prominent musical section transcribed. Each section of the piece was labelled to show the basic formal structure. For example: verse 1 – *A* section, chorus – *B* section, and so on. Within each section (*A, B*, etc.), the melodic vocal phrases were divided into sub-sections and labelled *Aa* and *Ab* in the first and second bar of verse 1, and *Ba* and *Bb* in the first two bars of the chorus section. This method of labelling describes variants across the phrases. Melodic vocal phrases that share the same tones and rhythm were labelled as identical and those that differ in notes and rhythm were given alternate labels to establish similarities and patterns within each section and sub-section of the piece.

I conclude by considering the hypothesis that melodic hooks in popular song conform to gestalt principles. My findings show that all four of the hit pop songs analysed play on gestalt principles. For instance, all four songs display ambiguity of key. The note-to-note analysis shows high levels of expectation present throughout the chorus sections of these musical works (where participants in my music survey – included in Chapter 6 – agreed the hooks were most prominent). This suggests that expectation is present in the vocal melody of the catchiest sections of the number one hit songs selected for this study. Hooks in hit pop songs play with our expectations and this makes them catchy, keeping us coming back for more.

My analysis demonstrates that listeners respond to expectation and other factors in accordance with the theories of Meyer, Narmour, Huron, and other gestalt theorists. But to really know how listeners respond, I decided to match the analytical findings to listener responses to each of the same songs analysed in the preceding chapters. Chapter 6 offers a useful method of comparison and is a control on my findings in the form of a survey.

The purpose of the survey reported in Chapter 6 was to establish whether the majority of music listeners experience hooks and catchiness in similar (or the same) ways. This data displayed a positive result, i.e. music listeners *do* experience hooks in similar ways. I incorporated my own original composition as part of this survey and melodic analysis to understand the possible reasons why it did not achieve hit song status on the South African radio charts. The findings for *Tip Toe* show that while it does conform to chord and scale tones (i.e. within the key) in ways very similar to the other four songs analysed, the other songs display more ambiguity in the harmony (especially *Happy*, which moves between F and F minor), and they tend not to resolve harmonically or melodically. The melodies of the hit pop songs contain more chromatic notes than does *Tip Toe*. The fact that there is no modulation or change of key suggests that the harmony and, by implication, the melody, does not surprise the listener or create expectation of closure or return in the same way hit songs do. In *Happy, Call Me, Maybe, Blurred Lines* and *Rolling in the Deep* there is the use of syncopation or off-beat accents that give momentum and drive to the melody. *Tip Toe* tends to emphasise the beat and the melodies are characterised by closure.

To summarise the results of the experience of catchiness as a whole from the survey in Chapter 6: 91.32% of participants experienced catchiness within the musical work of *Happy*, 89.32% in *Call Me, Maybe*, 82.84% in *Rolling in the Deep*, 70% in *Blurred Lines* and 80.58% in *Tip Toe*. When asked which of the five songs that where listened to the participants found the catchiest, *Happy* was found to be the catchiest by 48.6%. I believe this is because of *Happy*'s high level of expectation. *Call Me, Maybe* was second with 31.4%, *Blurred Lines* with 8.6% and *Rolling in the Deep* and *Tip Toe* tied both with 5.7% respectively.

From these results, I can conclude that catchiness in the vocal melodies of twenty-first-century hit pop songs is experienced in similar ways by average music listeners. One reason why my own composition could not achieve the same level of success lies in the music production factors that are paramount to making a pop song a hit, such as timbre, vocal quality, production techniques, the mix, mastering and marketing. On a cognitive level, the failure of my own composition to achieve hit status can be explained by the fact that expectation is met too frequently. In sum: there is insufficient ambiguity in the notes chosen for the hook melodies (especially in the chorus section) for this song to become catchy.

This dissertation investigated the phenomenon of catchiness in twenty-first-century pop music. What makes you listen again and again to your favourite songs? The case studies and experiment show that there are specific principles, or common features, that make some pop music grab the attention of the listener. This study concludes that the most memorable pop melodies are present in the chorus of musical works and almost always incorporate elements of repetition, familiarity, simplicity, resolution (alluding to gestalt theory), ambiguity of key and, most importantly, expectation.

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Appendix A:

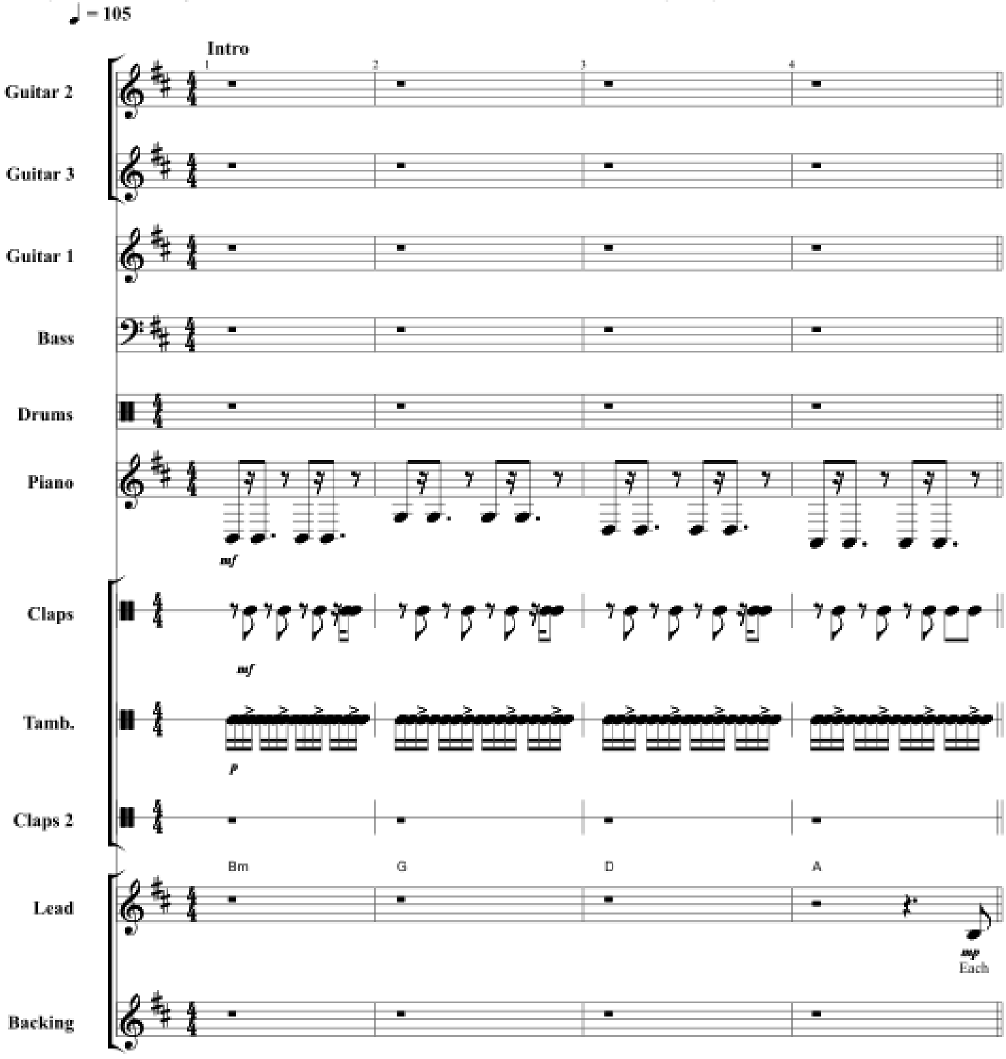
Full Transcriptions

Tip Toe

Lacey May

Words by Candice Armitage

Music by Kelly Grevler, Rob Visser, Gavin Edwards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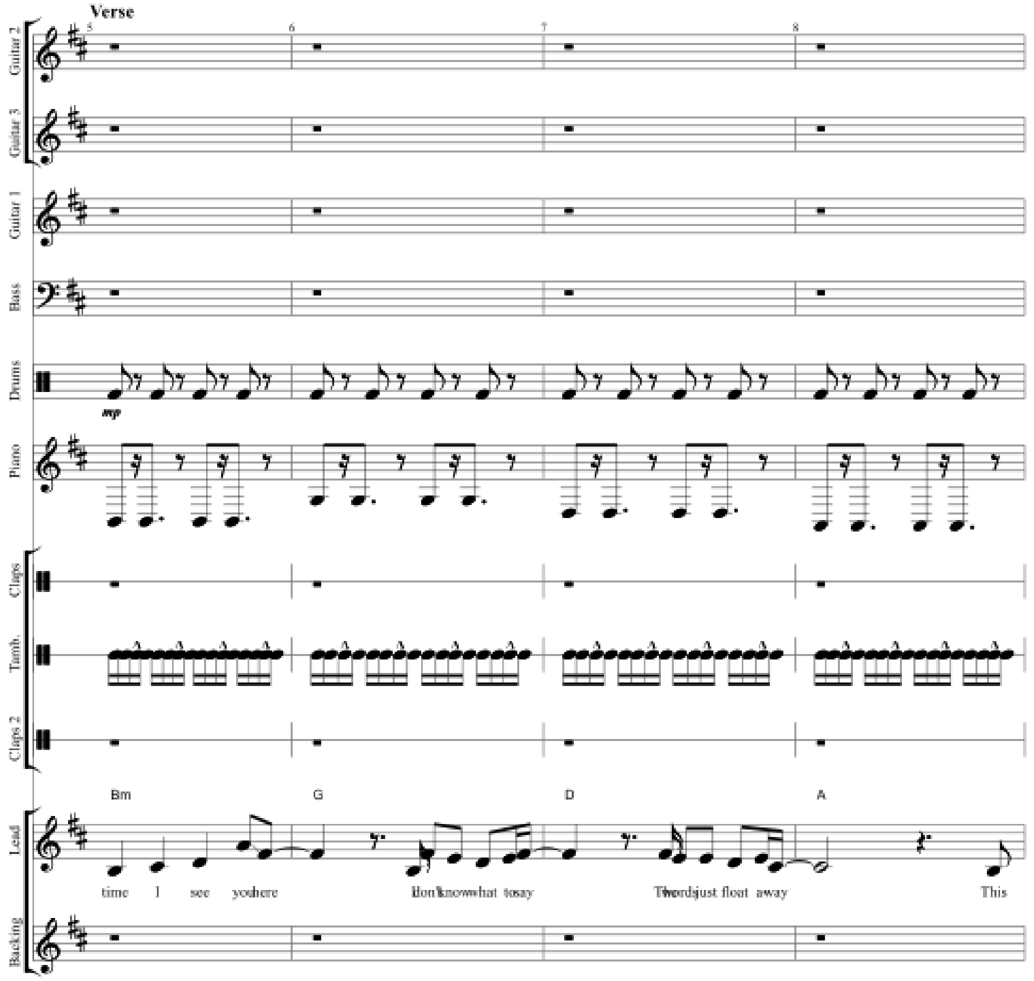
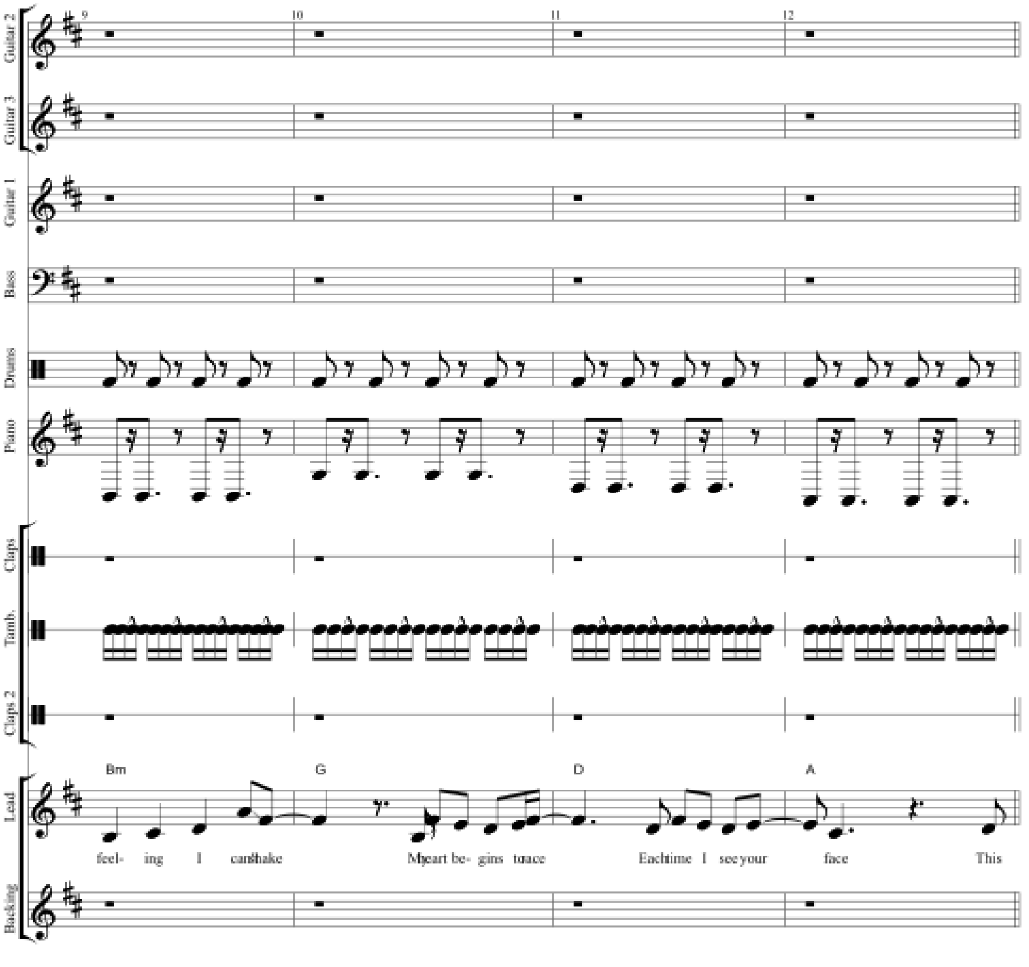
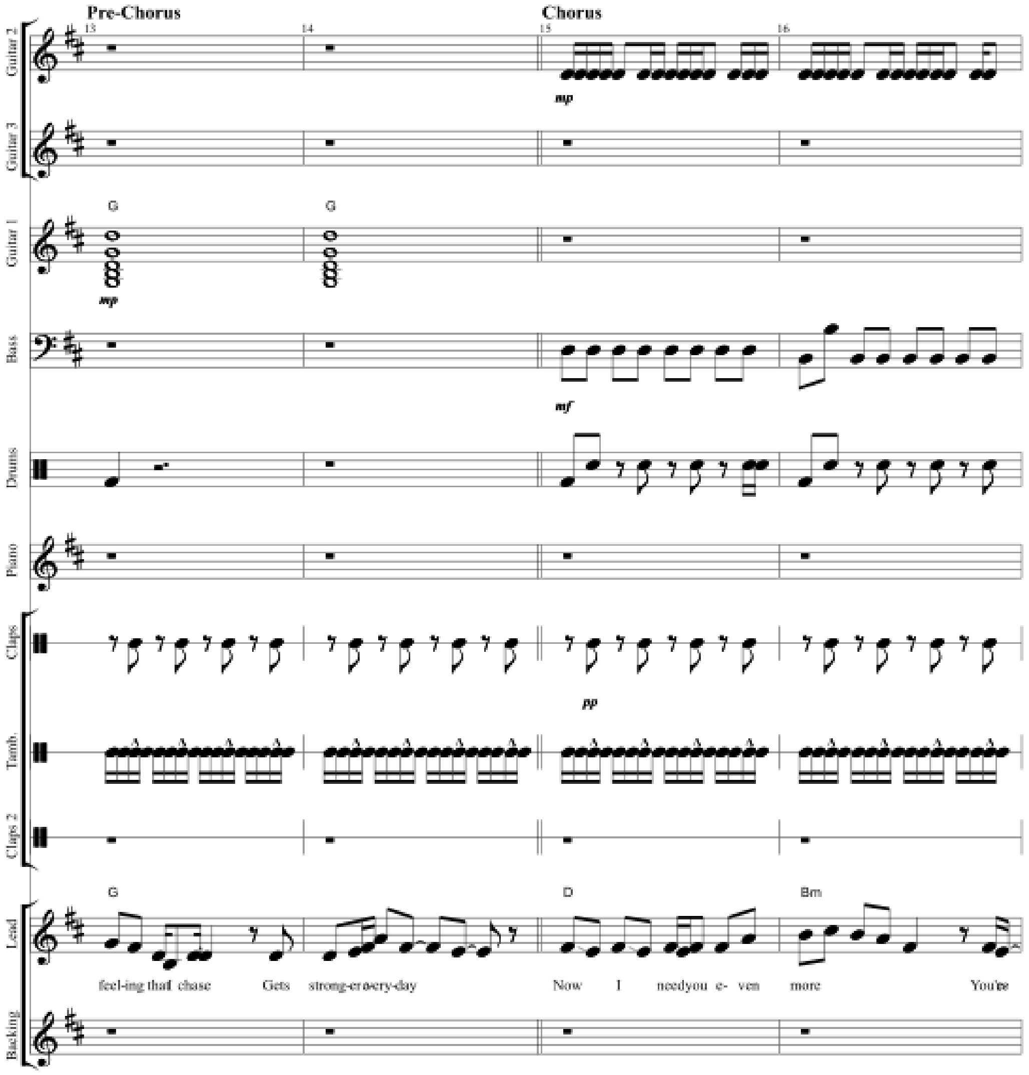
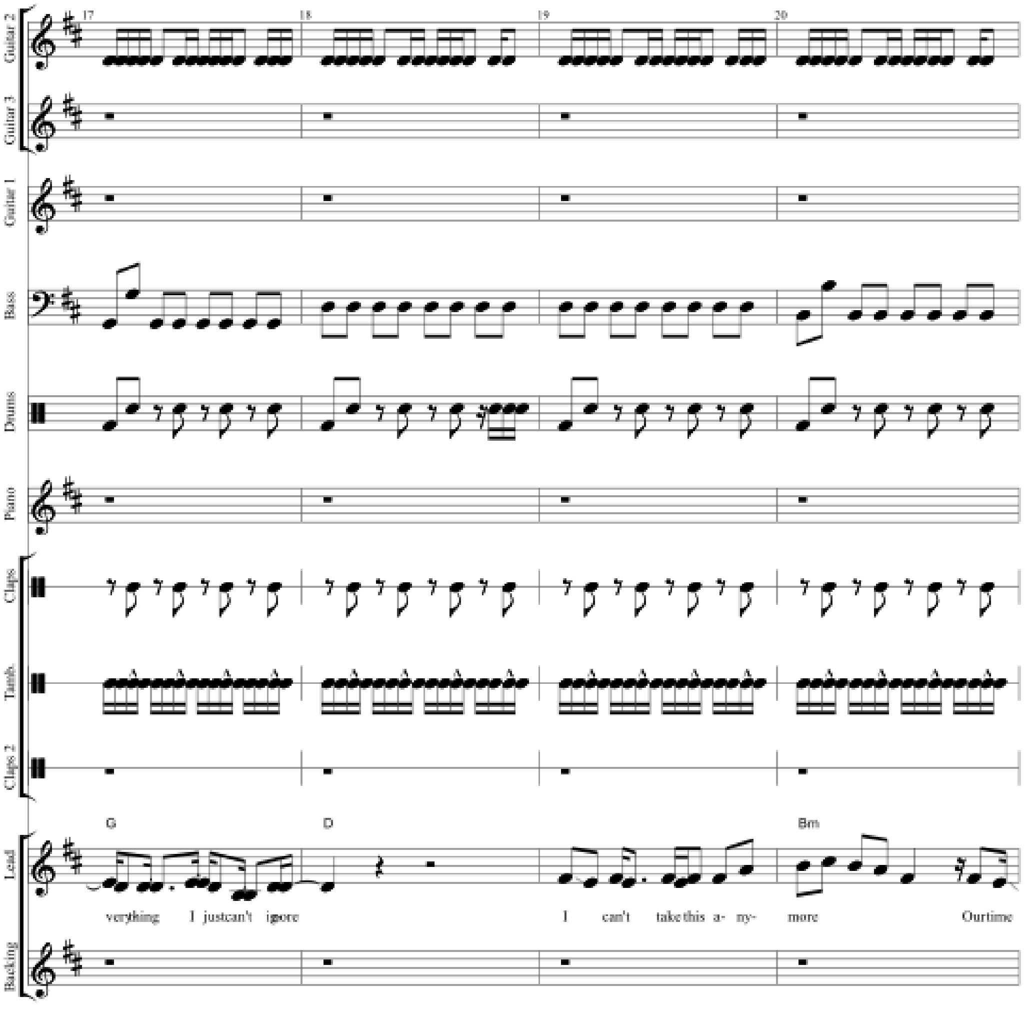
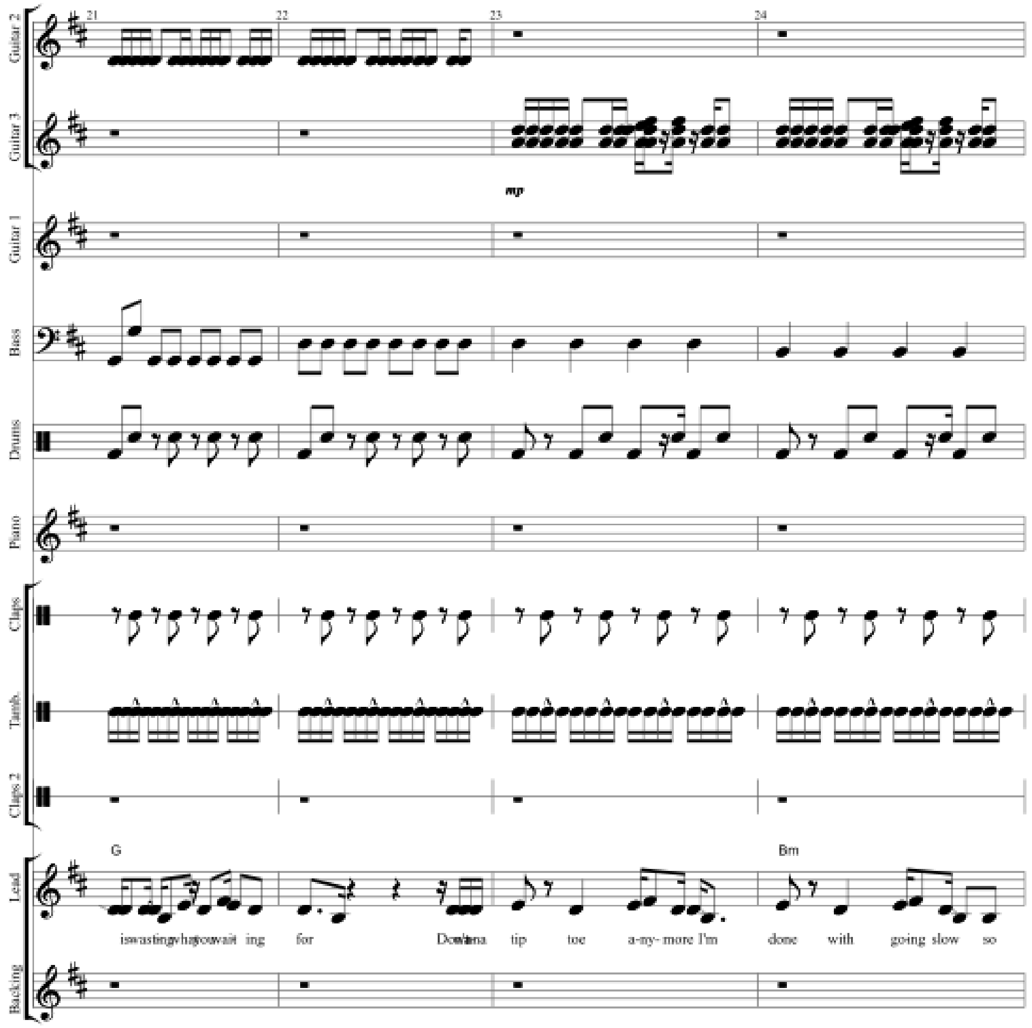
Intro
Guitar 2
Guitar 3
Guitar 1
Bass
Drums
Piano
mf
Claps
mf
Tamb.
p
Claps 2
Bm
G
D
A
Lead
mp
Each
Backing

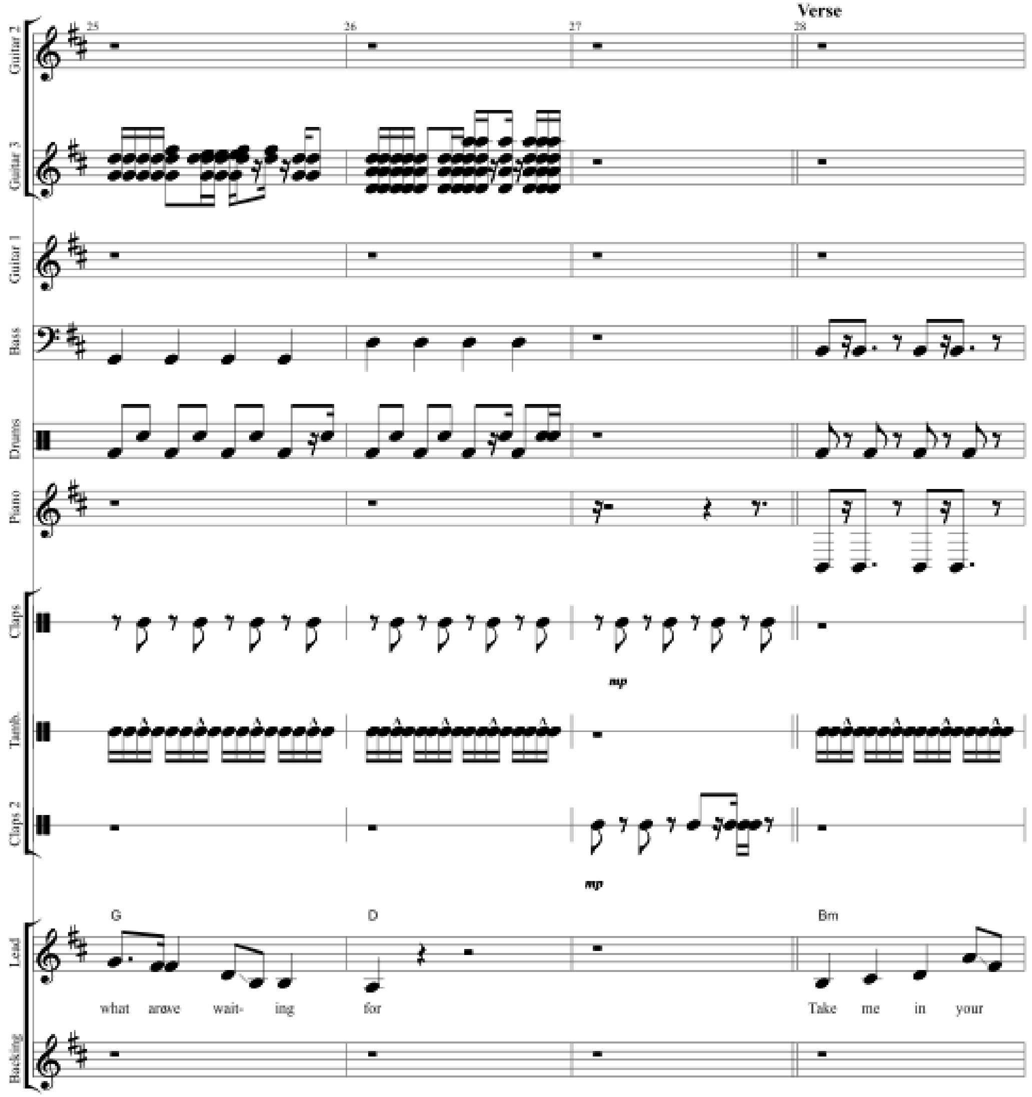

Verse
5
6
7
8
Guitar 2
Guitar 3
Guitar 1
Bass
Drums
mp
Piano
Claps
Tamb.
Claps 2
Bm
G
D
A
Lead
time I see you here
I don't know what to say
The words just float away
This
Backing


Guitar 2
Guitar 3
Guitar 1
Bass
Drums
Piano
Claps
Tamb.
Claps 2
Lead
Backing
9
10
11
12
Bm
G
D
A
feel- ing I canshake
Myheart be- gins torace
Eachtime I see your face
This


Pre-Chorus
Chorus
13
14
15
16
Guitar 2
Guitar 3
Guitar 1
Bass
Drums
Piano
Claps
Tamb.
Claps 2
Lead
Backing
G
G
mp
mp
mf
pp
G
D
Bm
feel-ing that I chase Gets strong-er ev-ery-day
Now I need you e- ven more
You're


Guitar 2
Guitar 3
Guitar 1
Bass
Drums
Piano
Claps
Tamb.
Claps 2
Lead
Backing
17
18
19
20
G
D
Bm
verything I just can't ignore
I can't take this a- ny- more
Our time


21
22
23
24
Guitar 2
Guitar 3
mp
Guitar 1
Bass
Drums
Piano
Claps
Tamb.
Claps 2
G
Bm
Lead
is wasting what you wait ing for Don't wanna tip toe a-ny- more I'm done with going slow so
Backing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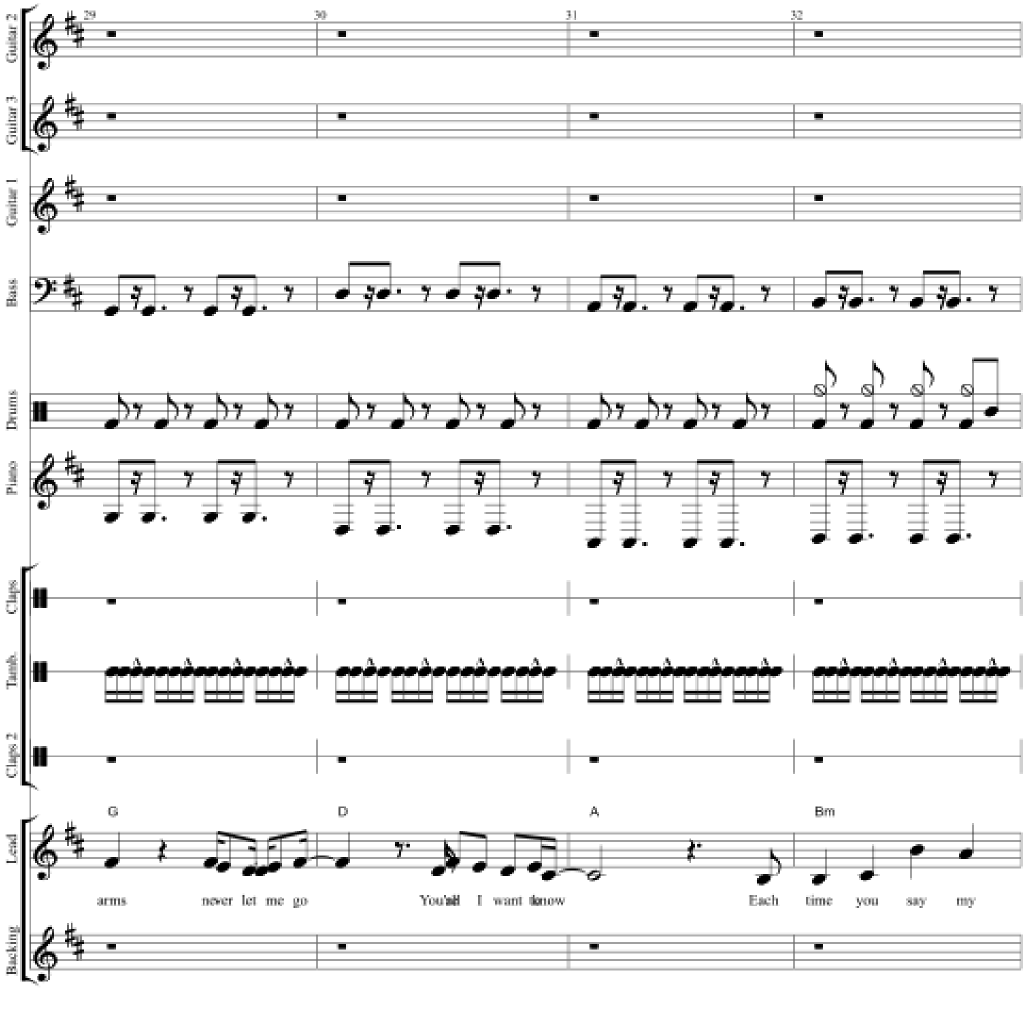
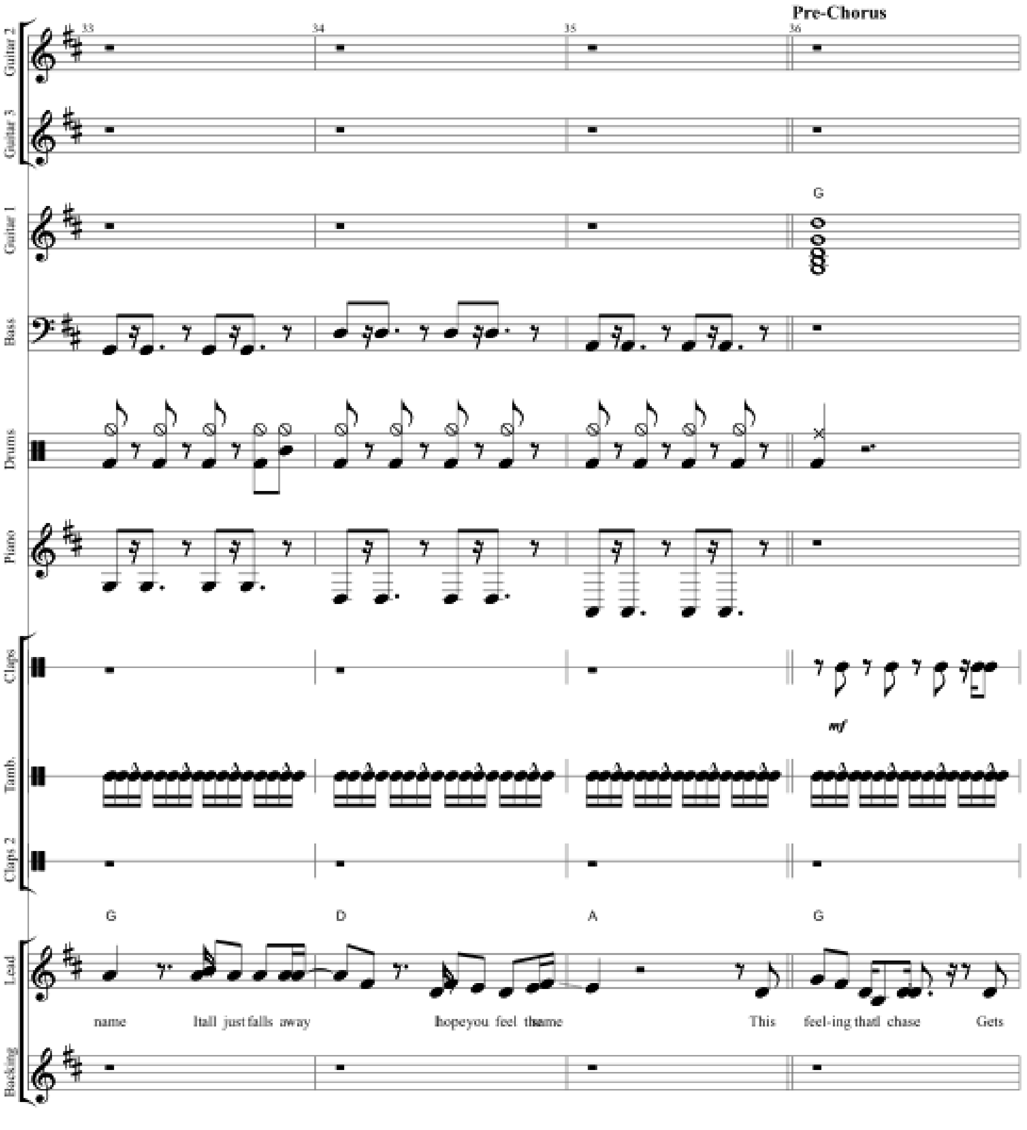
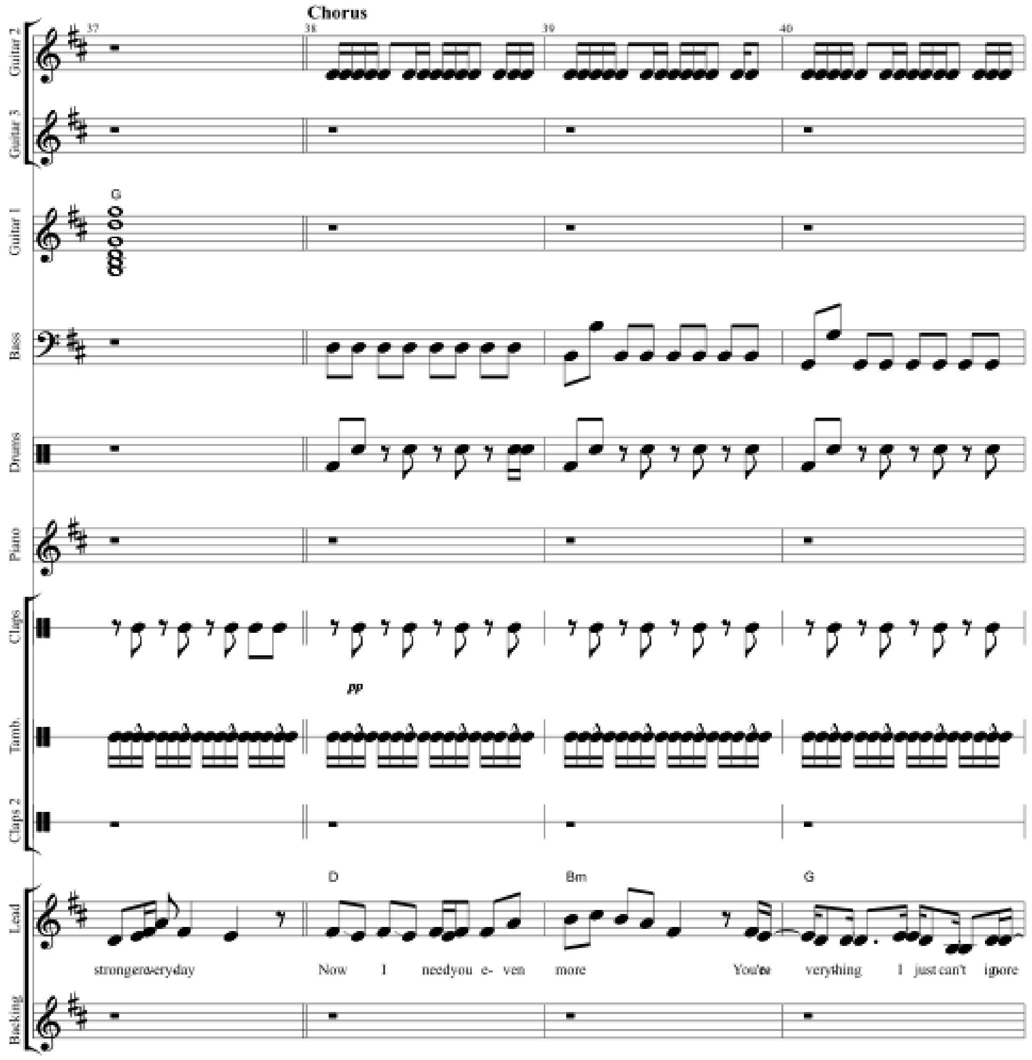
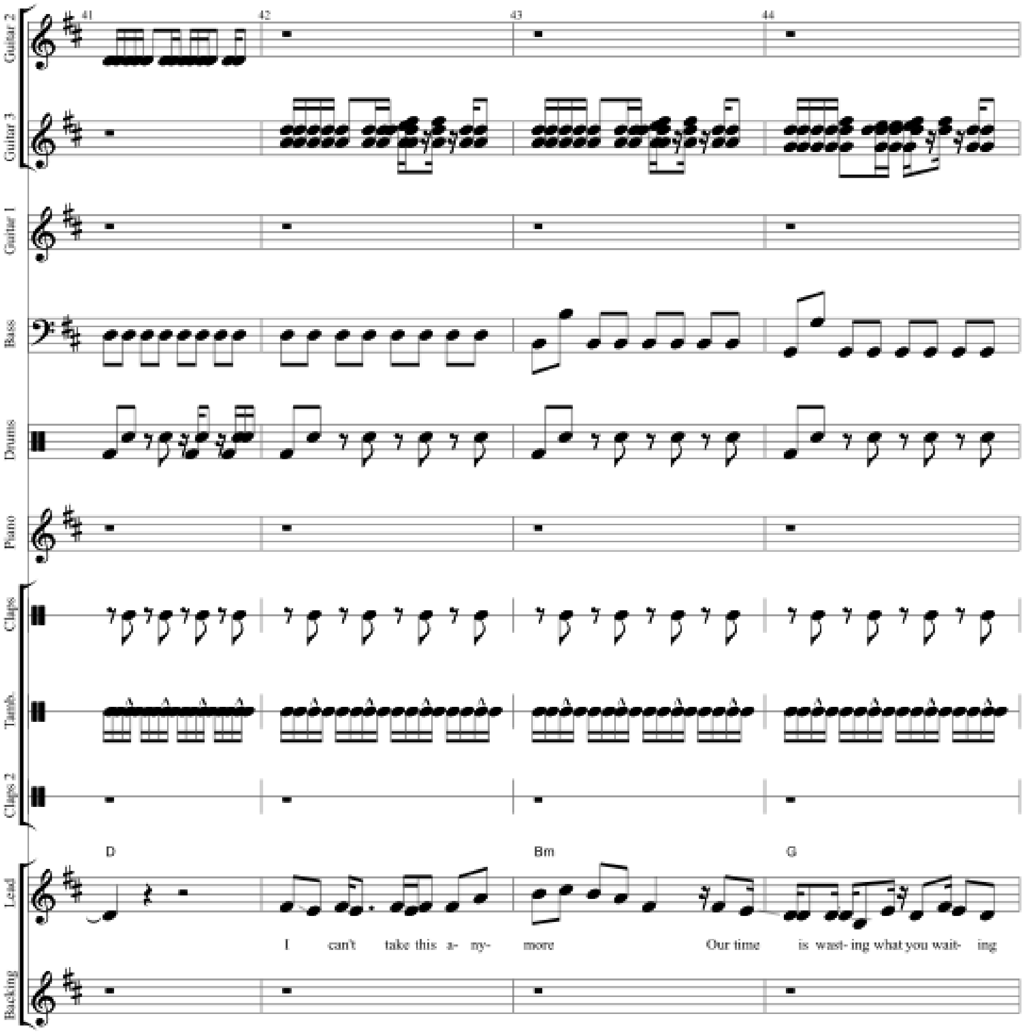
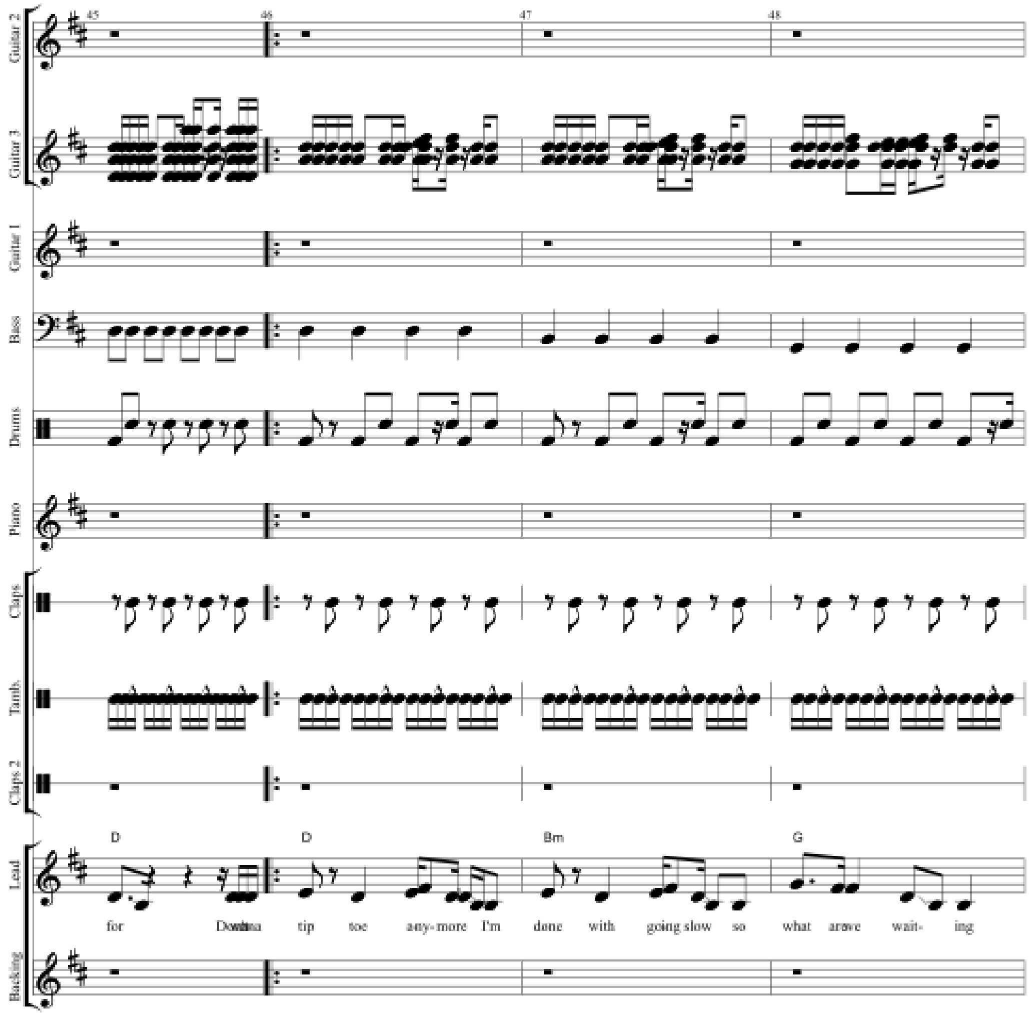
27
28
Guitar 2
Guitar 3
Guitar 1
Bass
Drums
Piano
Claps
Tamb.
Claps 2
mp
mp
G
D
Bm
Lead
what arøve wait- ing
for
Take me in your
Backing

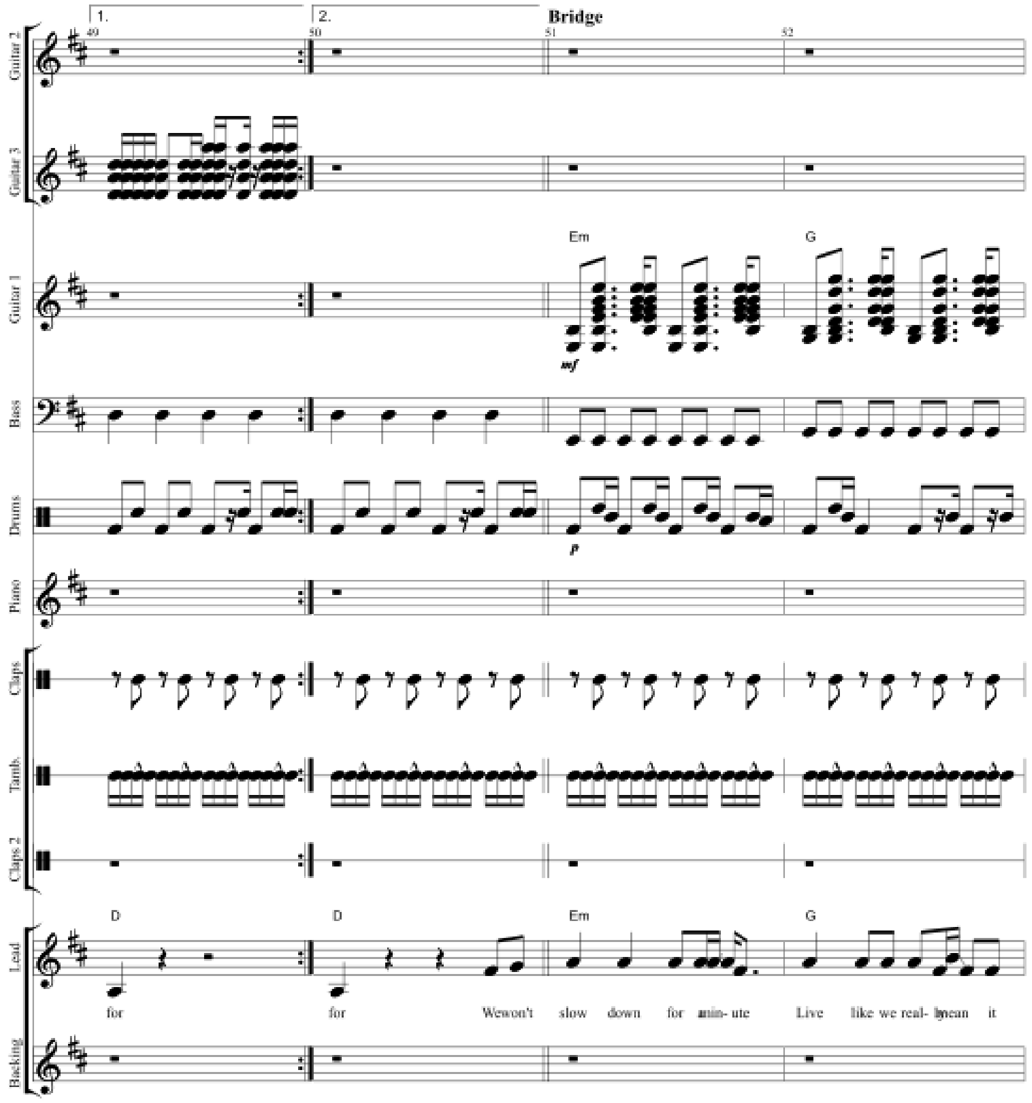

Guitar 2
Guitar 3
Guitar 1
Bass
Drums
Piano
Claps
Tamb.
Claps 2
Lead
Backing
29
30
31
32
G
D
A
Bm
arms never let me go You're all I want to know Each time you say my

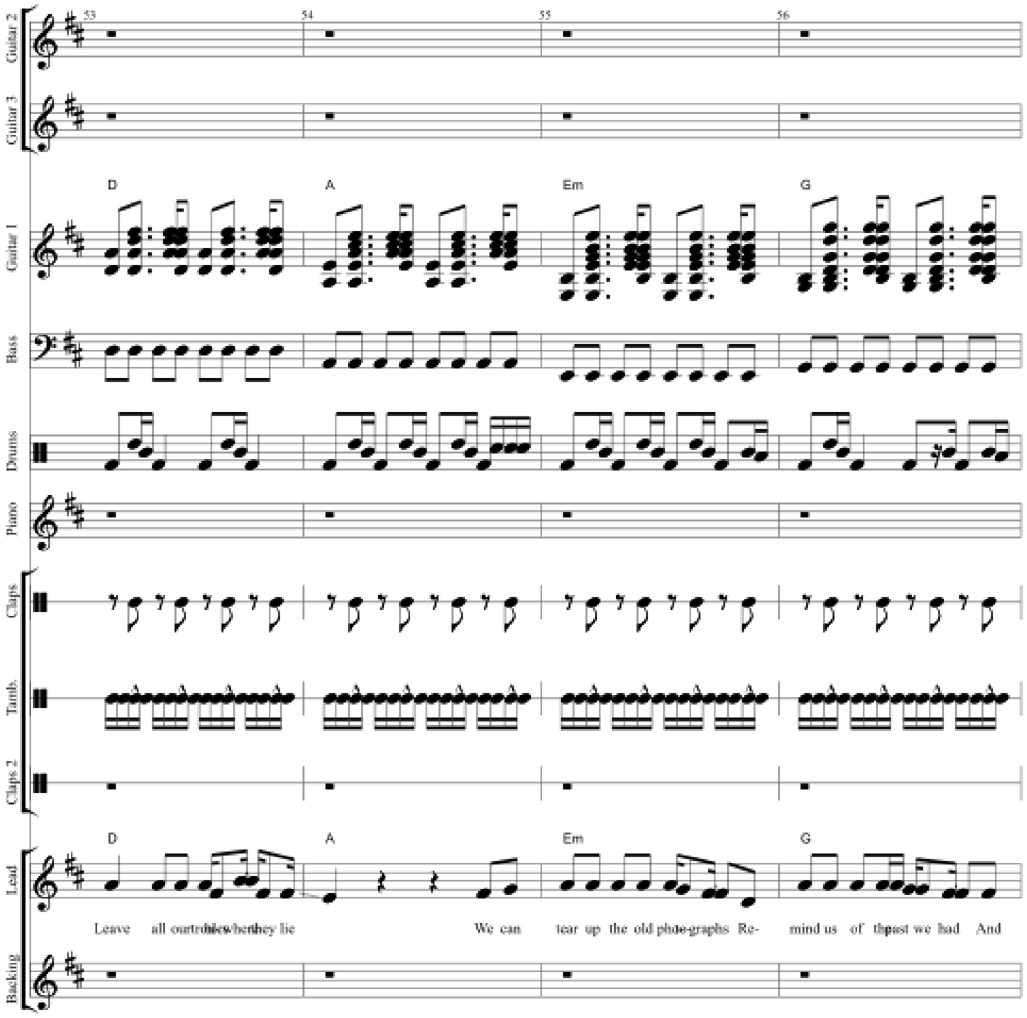

Pre-Chorus
33
34
35
36
Guitar 2
Guitar 3
Guitar 1
G
Bass
Drums
Piano
Claps
mf
Tamb.
Claps 2
G
D
A
G
Lead
name
It all just falls away
I hope you feel the same
This
feel-ing that I chase
Gets
Backing

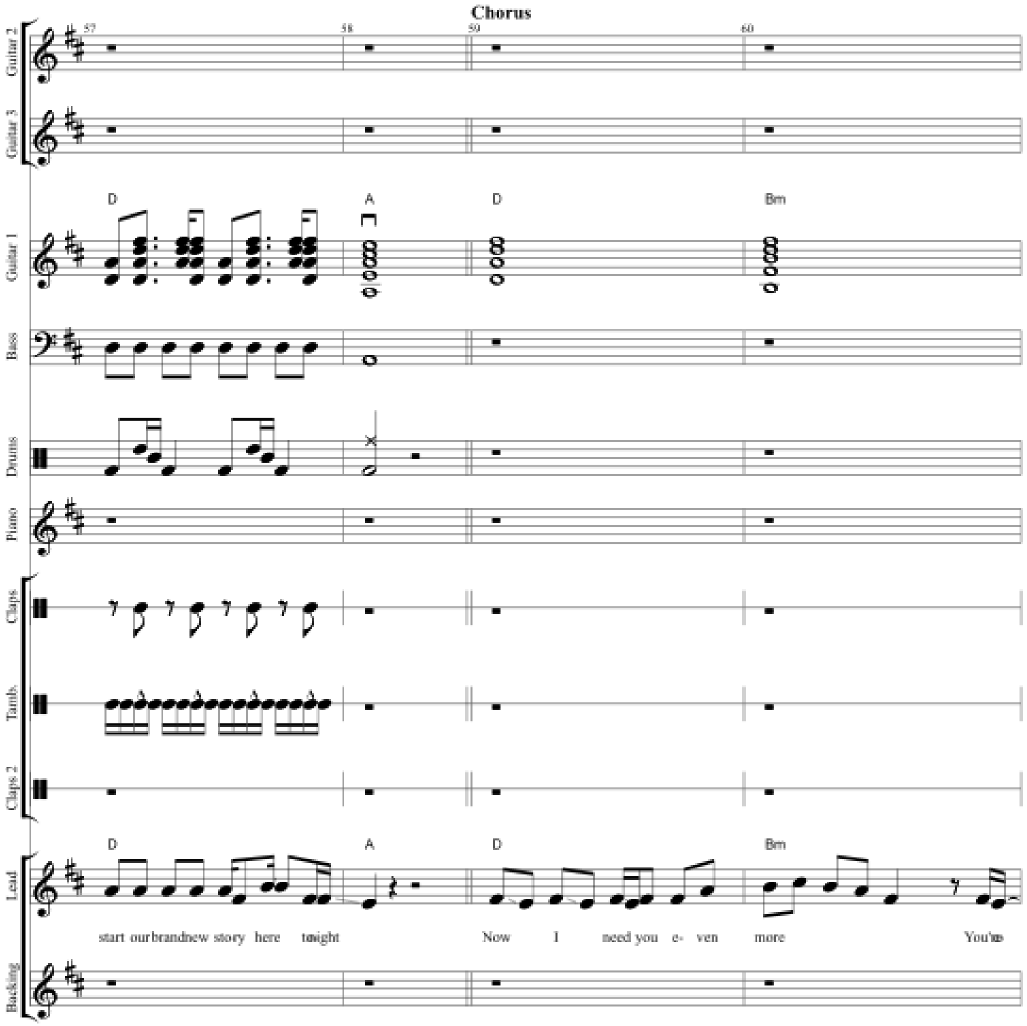

Chorus
37
38
39
40
Guitar 2
Guitar 3
Guitar 1
G
Bass
Drums
Piano
Claps
pp
Tamb.
Claps 2
Lead
D
Bm
G
strongereveryday
Now I needyou e- ven more
You'ree verything I justcan't ignore
Backing

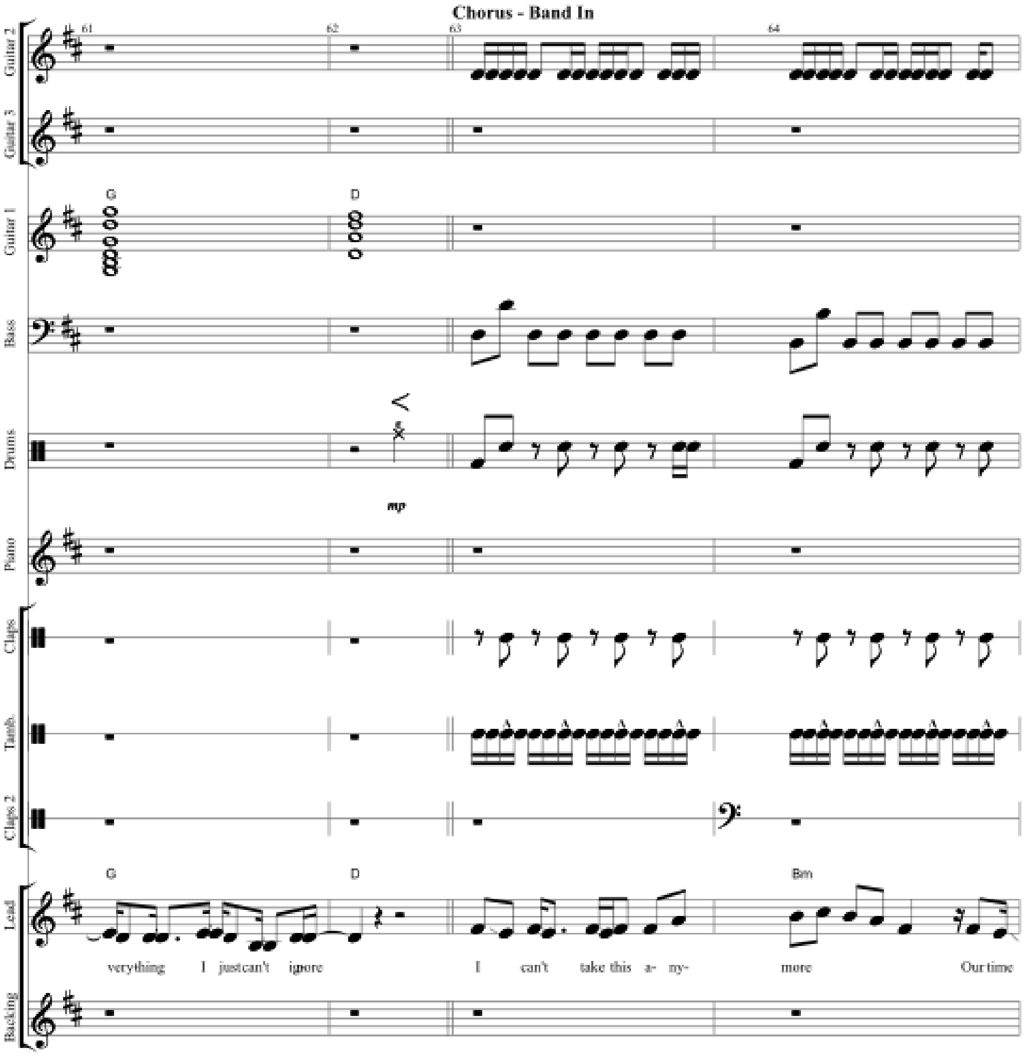

Guitar 2
Guitar 3
Guitar 1
Bass
Drums
Piano
Claps
Tamb.
Claps 2
Lead
Backing
41
42
43
44
D
Bm
G
I can't take this a- ny- more
Our time is wast- ing what you wait- ing

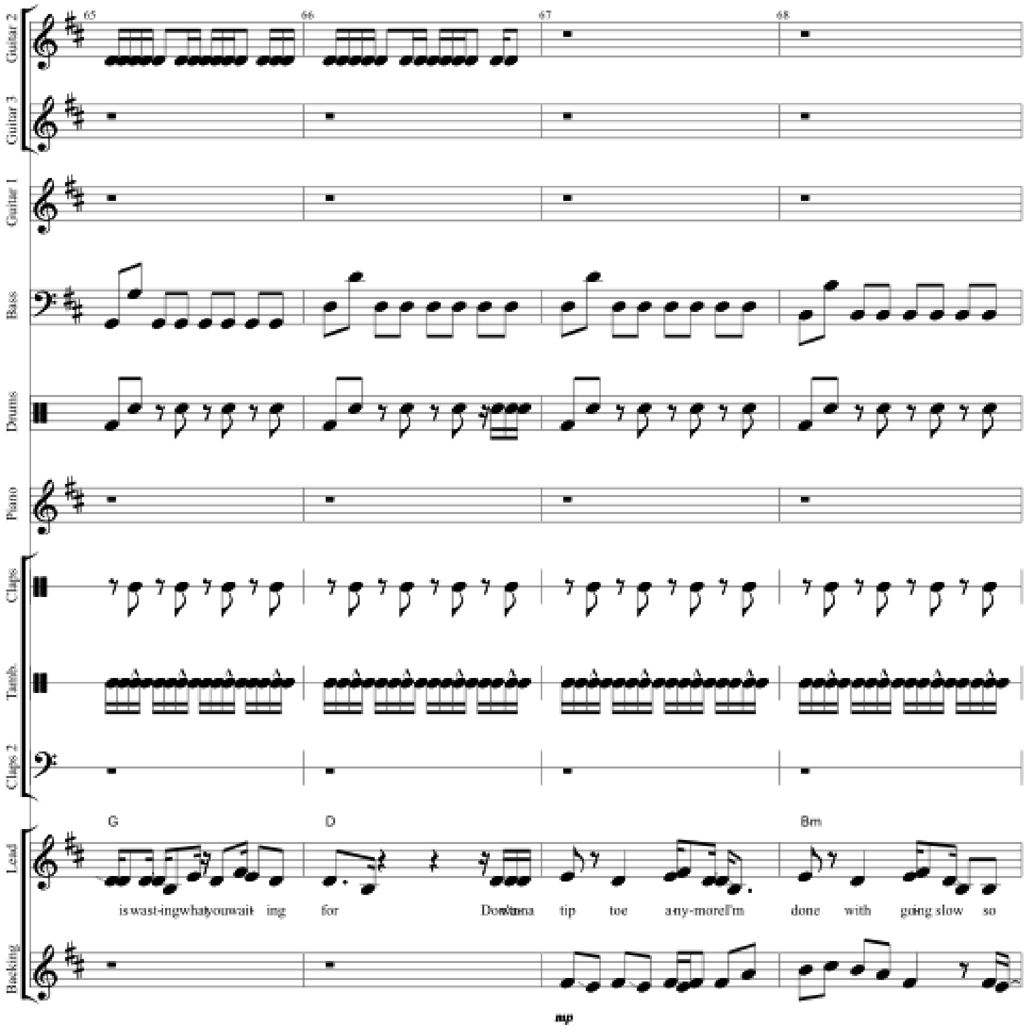

45
46
47
48
Guitar 2
Guitar 3
Guitar 1
Bass
Drums
Piano
Claps
Tamb.
Claps 2
Lead
Backing
D
D
Bm
G
for
Dowanna
tip
toe
any- more
I'm
done
with
going slow
so
what
arawe
wait-
ing

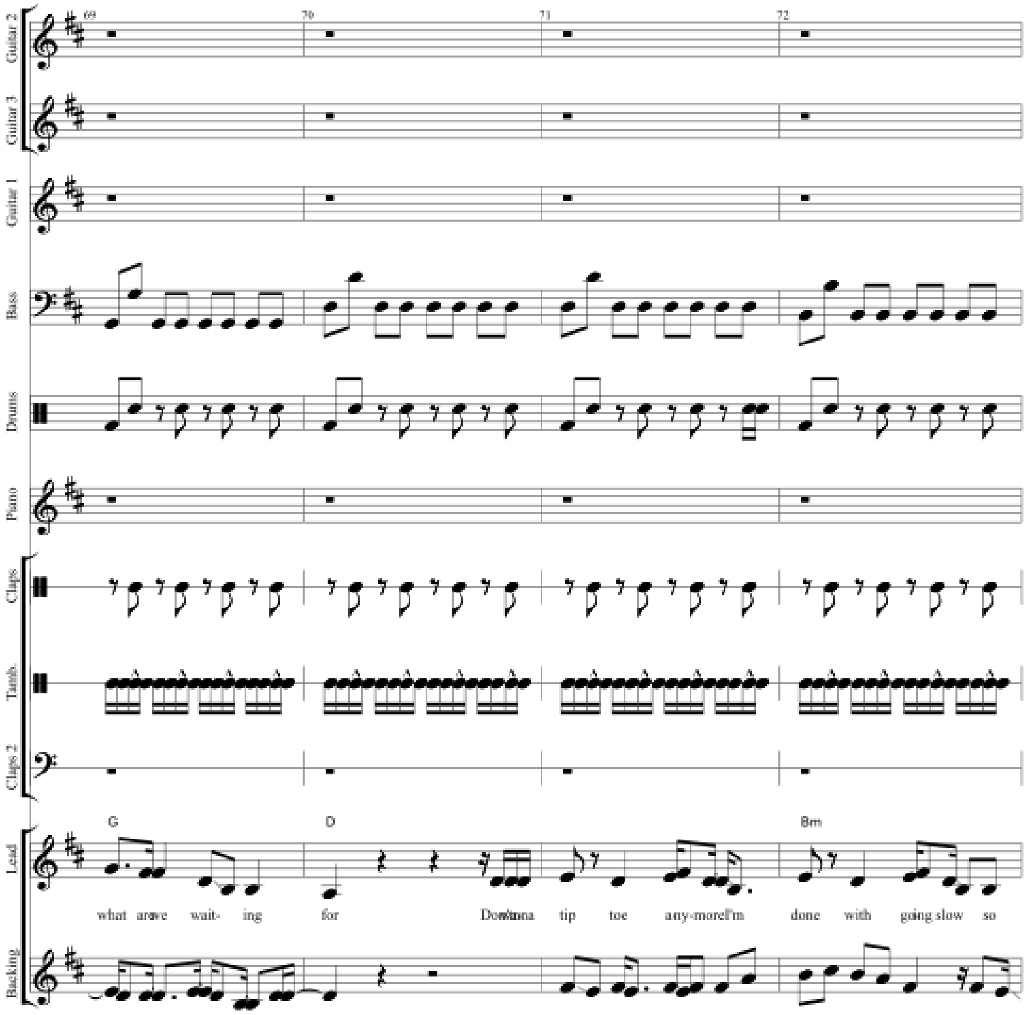

1.
2.
Bridge
49
50
51
52
Guitar 2
Guitar 3
Guitar 1
Bass
Drums
Piano
Claps
Tamb.
Claps 2
Lead
Backing
Em
G
mf
p
D
D
Em
G
for
for
We won't slow down for a min- ute
Live like we real- ly mean it

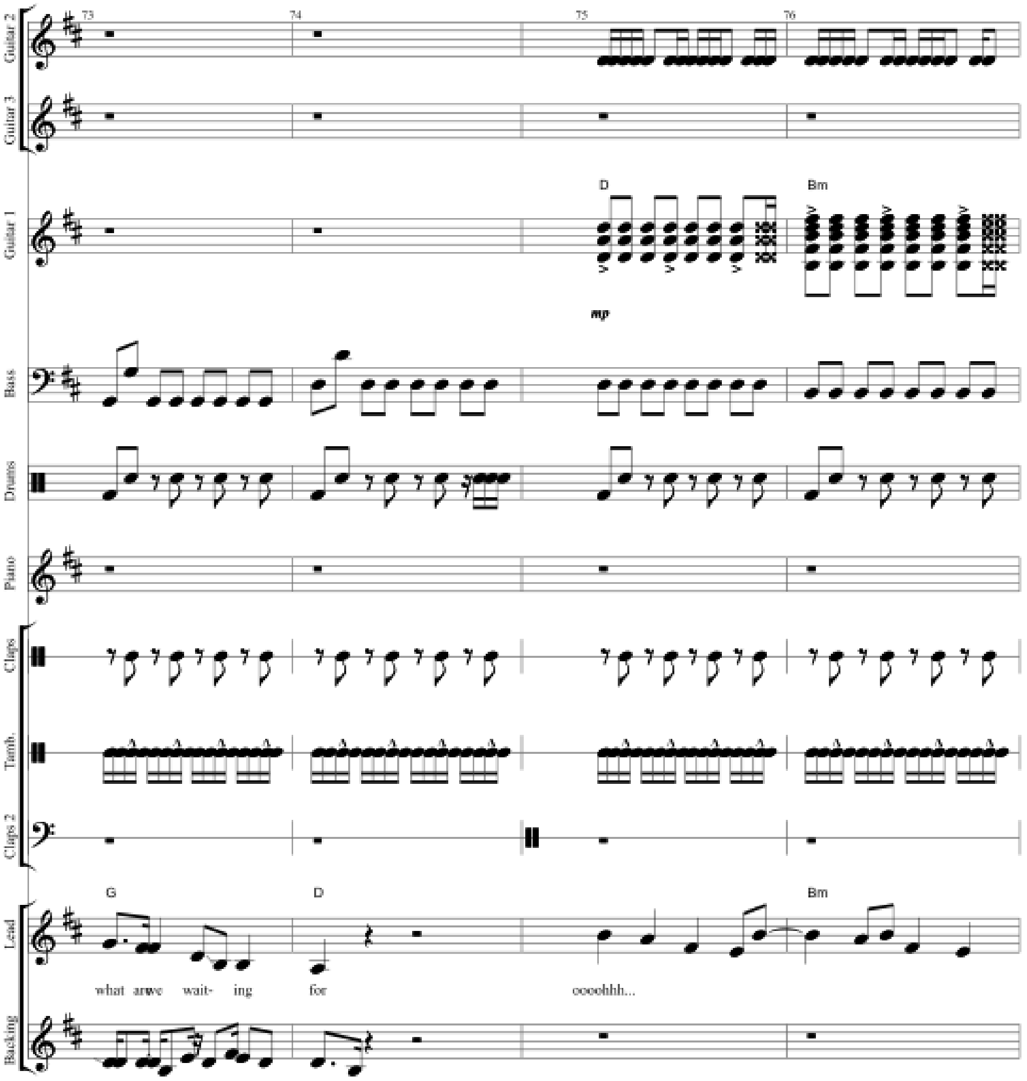

Guitar 2
Guitar 3
Guitar 1
Bass
Drums
Piano
Claps
Tamb.
Claps 2
Lead
Backing
53
54
55
56
D
A
Em
G
D
A
Em
G
Leave all our troubles where they lie
We can tear up the old photo-graphs Re-
mind us of the past we had And


Chorus
57
58
59
60
Guitar 2
Guitar 3
Guitar 1
Bass
Drums
Piano
Claps
Tamb.
Claps 2
Lead
Backing
D
A
D
Bm
start our brand new story here to night
Now I need you e- ven more
You're


Chorus - Band In
61
62
63
64
Guitar 2
Guitar 3
Guitar 1
G
D
Bass
Drums
mp
Piano
Claps
Tamb.
Claps 2
Lead
G
D
Bm
verything I just can't ignore
I can't take this a- ny-
more
Our time
Backing


65
66
67
68
Guitar 2
Guitar 3
Guitar 1
Bass
Drums
Piano
Claps
Tamb.
Claps 2
Lead
Backing
G
D
Bm
is wast-ing what you wait - ing
for
Don't wanna
tip
toe
a-ny-more I'm
done
with
go-ing slow
so
mp


Guitar 2
Guitar 3
Guitar 1
Bass
Drums
Piano
Claps
Tamb.
Claps 2
Lead
Backing
69
70
71
72
G
D
Bm
what are we wait- ing for
Don't wanna tip toe any-more I'm
done with going slow so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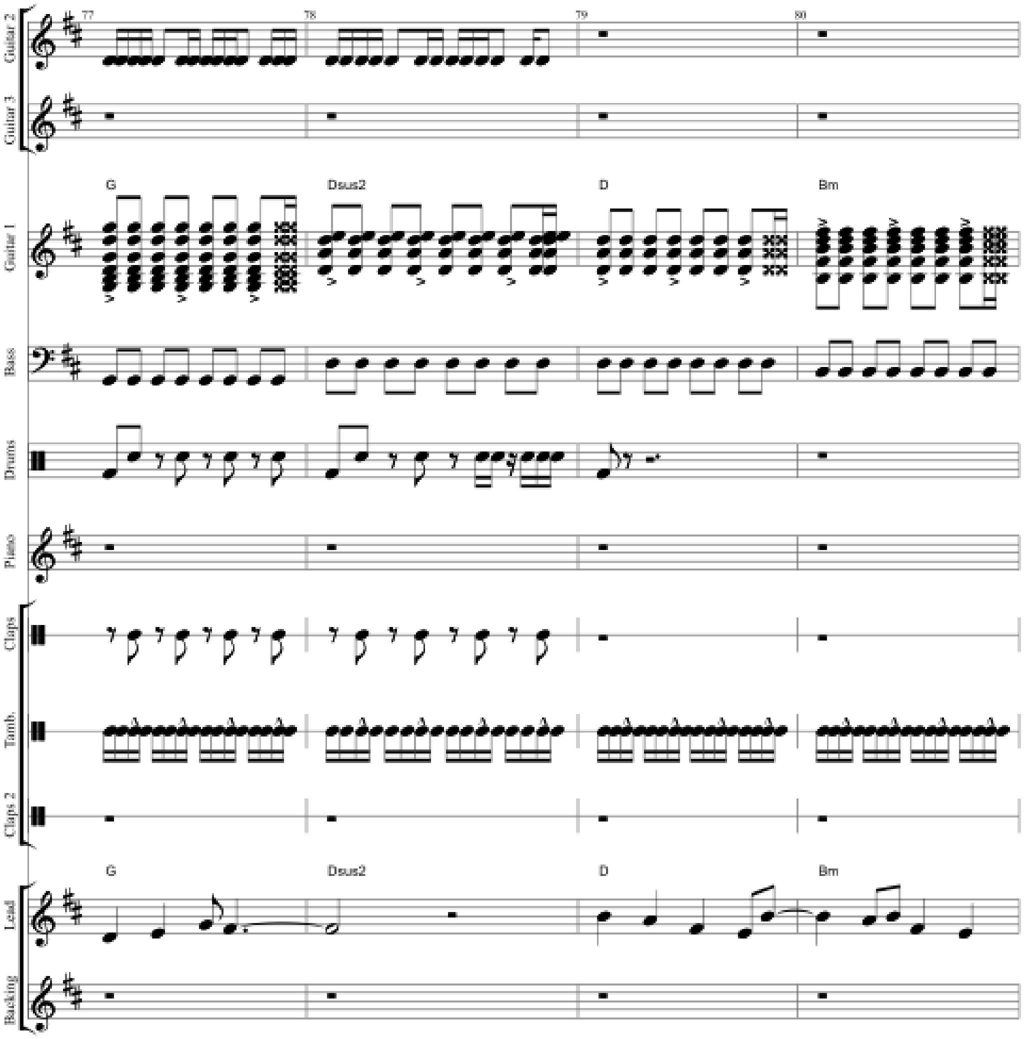
Guitar 1
Bass
Drums
Piano
Claps
Tamb.
Claps 2
Lead
Backing
73
74
75
76
D
Bm
mp
G
D
Bm
what arwe wait- ing
for
oooohhh...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Guitar 3
Guitar 1
Bass
Drums
Piano
Claps
Tamb.
Claps 2
Lead
Backing
77
78
79
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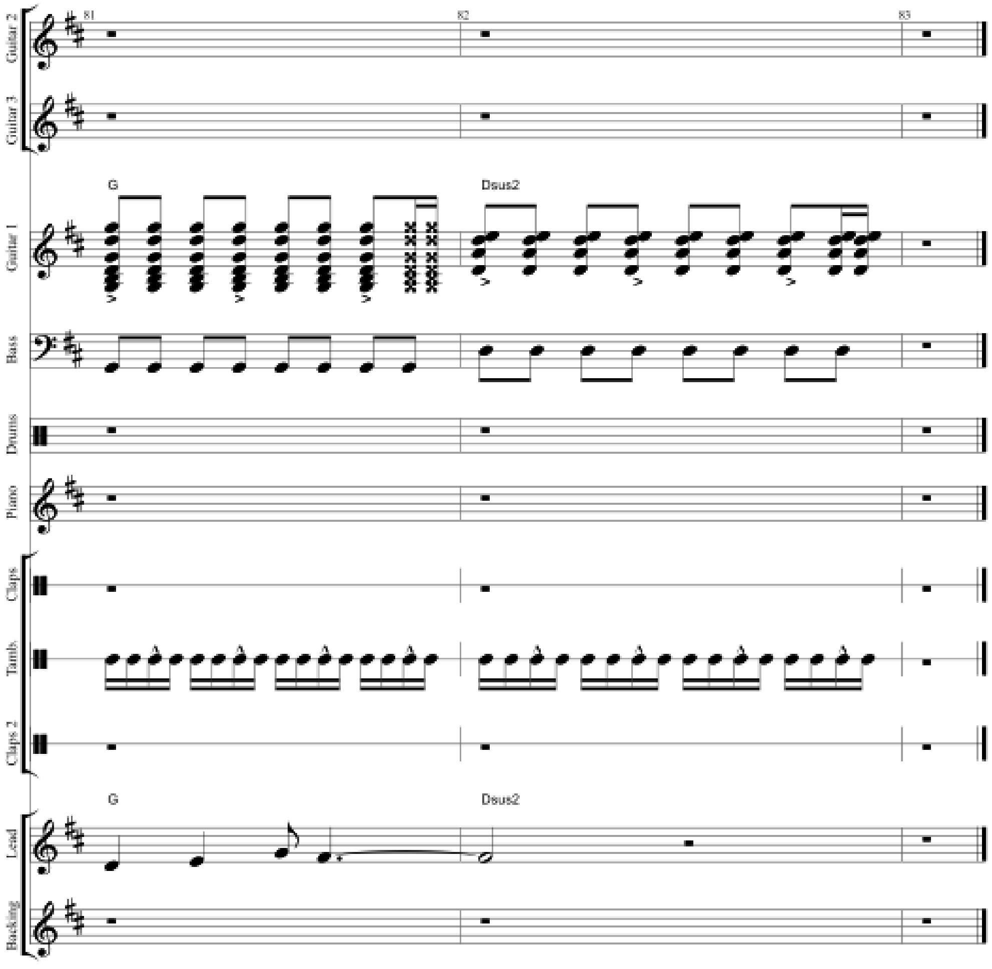
D
Bm
G
Dsus2
D
Bm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Guitar 3
Guitar 1
Bass
Drums
Piano
Claps
Tamb.
Claps 2
Lead
Backing
81
82
83
G
Dsus2
G
Dsus2

21/21

Appendix B:
Survey Questionnaire

Song 1: *Happy* – Pharrell Williams
Verse: 'it might seem crazy what I'm about to say…'
Chorus: 'because I'm happy…'

A. On the whole, I find *Happy* a catchy song
1-strongly disagree
2-disagree
3-agree
4- strongly agree
5- I don't know / indifferent

B. On the whole, I find the verses of *Happy* catchy
1-strongly disagree
2-disagree
3-agree
4- strongly agree
5- I don't know / indifferent

C. On the whole, I find the chorus of *Happy* catchy
1-strongly disagree
2-disagree
3-agree
4- strongly agree
5- I don't know / indifferent
5- I don't know / indifferent

D. I find the chorus section catchier than the verse
1-strongly disagree
2-disagree

3-agree
4- strongly agree
5- I don’t know / indifferent

E. I find the vocal melodies catchy
1-strongly disagree
2-disagree
3-agree
4- strongly agree
5- I don’t know / indifferent

Song 2: *Call Me, Maybe* – Carly Rea Jepsen
Verse: ‘I threw a wish in the well…’
Chorus: ‘hey I just met you, and this is crazy…’

A. On the whole, I find *Call Me, Maybe* a catchy song
1-strongly disagree
2-disagree
3-agree
4- strongly agree
5- I don’t know / indifferent

B. On the whole, I find the verses of *Call Me, Maybe* catchy
1-strongly disagree
2-disagree
3-agree
4- strongly agree
5- I don’t know / indifferent

C. On the whole, I find the chorus of *Call Me, Maybe* catchy
1-strongly disagree
2-disagree

3-agree

4- strongly agree

5- I don’t know / indifferent

D. I find the chorus section catchier than the verse

1-strongly disagree

2-disagree

3-agree

4- strongly agree

5- I don’t know / indifferent

E. I find the vocal melodies catchy

1-strongly disagree

2-disagree

3-agree

4- strongly agree

5- I don’t know / indifferent

Song 3: *Rolling in the Deep* - Adele

Verse: ‘there’s a fire starting in my heart…’

Chorus: ‘we could have had it all…’

A. On the whole, I find *Rolling in the Deep* a catchy song

1-strongly disagree

2-disagree

3-agree

4- strongly agree

5- I don’t know / indifferent

B. On the whole, I find the verses of *Rolling in the Deep* catchy

1-strongly disagree

2-disagree

3-agree

4- strongly agree

5- I don’t know / indifferent

C. On the whole, I find the chorus of *Rolling in the Deep* catchy

1-strongly disagree

2-disagree

3-agree

4- strongly agree

5- I don’t know / indifferent

D. I find the chorus section catchier than the verse

1-strongly disagree

2-disagree

3-agree

4- strongly agree

5- I don’t know / indifferent

E. I find the vocal melodies catchy

1-strongly disagree

2-disagree

3-agree

4- strongly agree

5- I don’t know / indifferent

Song 4: *Blurred Lines*- Robin Thicke

Verse: ‘if you can’t hear what I’m tryna say …’

Chorus: ‘you’re a good girl, I know you want it…’

A. On the whole, I find *Blurred Lines* a catchy song

1-strongly disagree

2-disagree

3-agree

4- strongly agree
5- I don’t know / indifferent

B. On the whole, I find the verses of *Blurred Lines* catchy
1-strongly disagree
2-disagree
3-agree
4- strongly agree
5- I don’t know / indifferent

C. On the whole, I find the chorus of *Blurred Lines* catchy
1-strongly disagree
2-disagree
3-agree
4- strongly agree
5- I don’t know / indifferent

D. I find the chorus section catchier than the verse
1-strongly disagree
2-disagree
3-agree
4- strongly agree
5- I don’t know / indifferent

E. I find the vocal melodies catchy
1-strongly disagree
2-disagree
3-agree
4- strongly agree
5- I don’t know / indifferent

Song 5: *Tip Toe*- Lacey May

Verse: 'each time I see you here, I don't know what to say…'

Chorus: 'now I need you even more…'

A. On the whole, I find *Tip Toe* a catchy song

1-strongly disagree

2-disagree

3-agree

4- strongly agree

5- I don't know / indifferent

B. On the whole, I find the verses of *Tip Toe* catchy

1-strongly disagree

2-disagree

3-agree

4- strongly agree

5- I don't know / indifferent

C. On the whole, I find the chorus of *Tip Toe* catchy

1-strongly disagree

2-disagree

3-agree

4- strongly agree

5- I don't know / indifferent

D. I find the chorus section catchier than the verse

1-strongly disagree

2-disagree

3-agree

4- strongly agree

5- I don't know / indifferent

E. I find the vocal melodies catchy

1-strongly disagree

2-disagree

3-agree

4- strongly agree

5- I don’t know / indifferent

Which song is the catchiest?

1- Happy

2- *Call Me, Maybe*

3- *Rolling in the Deep*

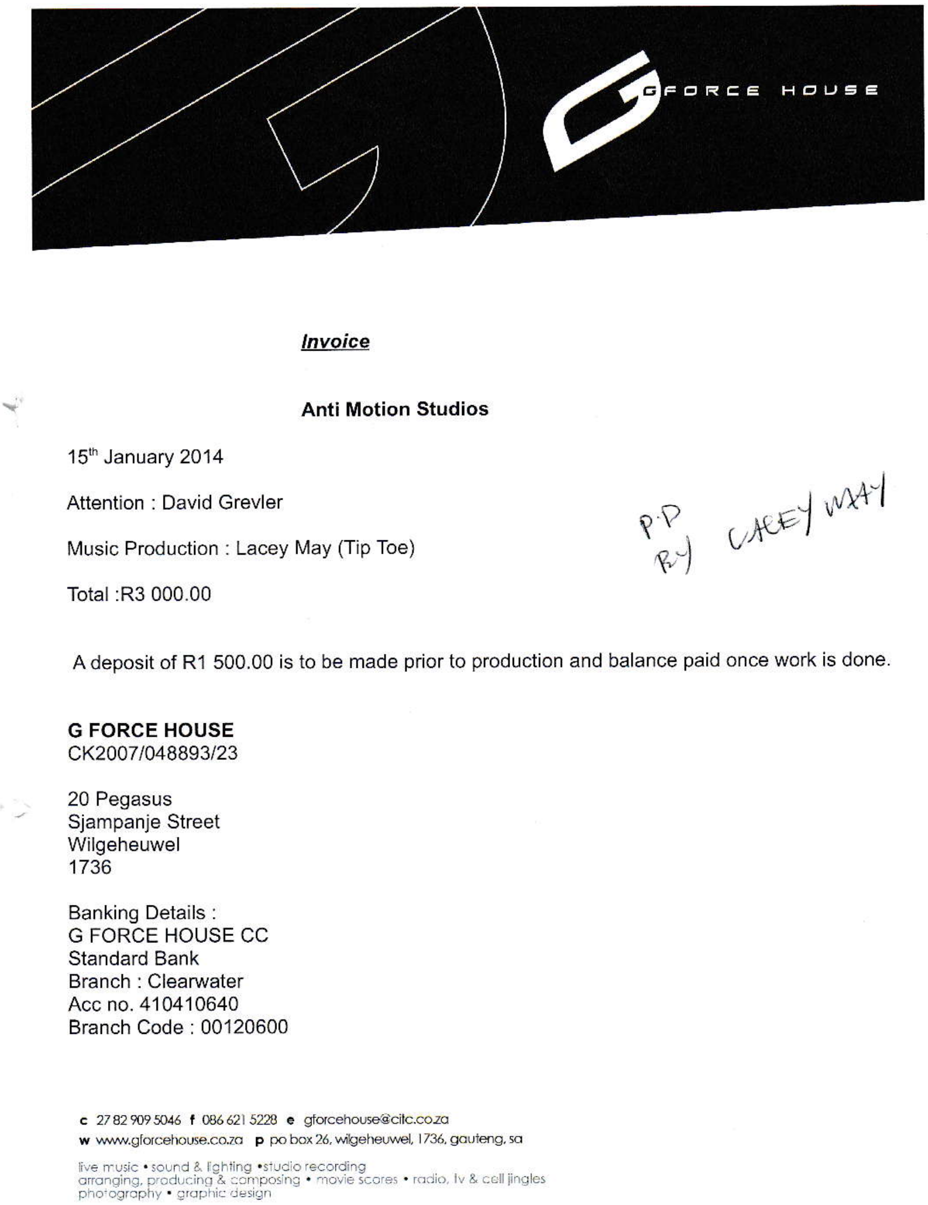
4- *Blurred Lines*

5- *Tip Toe*

Why is it the catchiest?

Appendix B:
Tip Toe - Lacey May release

Recording / Production


GFORCE HOUSE

Invoice

Anti Motion Studios

15th January 2014

Attention : David Grevler

Music Production : Lacey May (Tip Toe)

Total :R3 000.00

P.P
By LACEY MAY

A deposit of R1 500.00 is to be made prior to production and balance paid once work is done.

G FORCE HOUSE
CK2007/048893/23

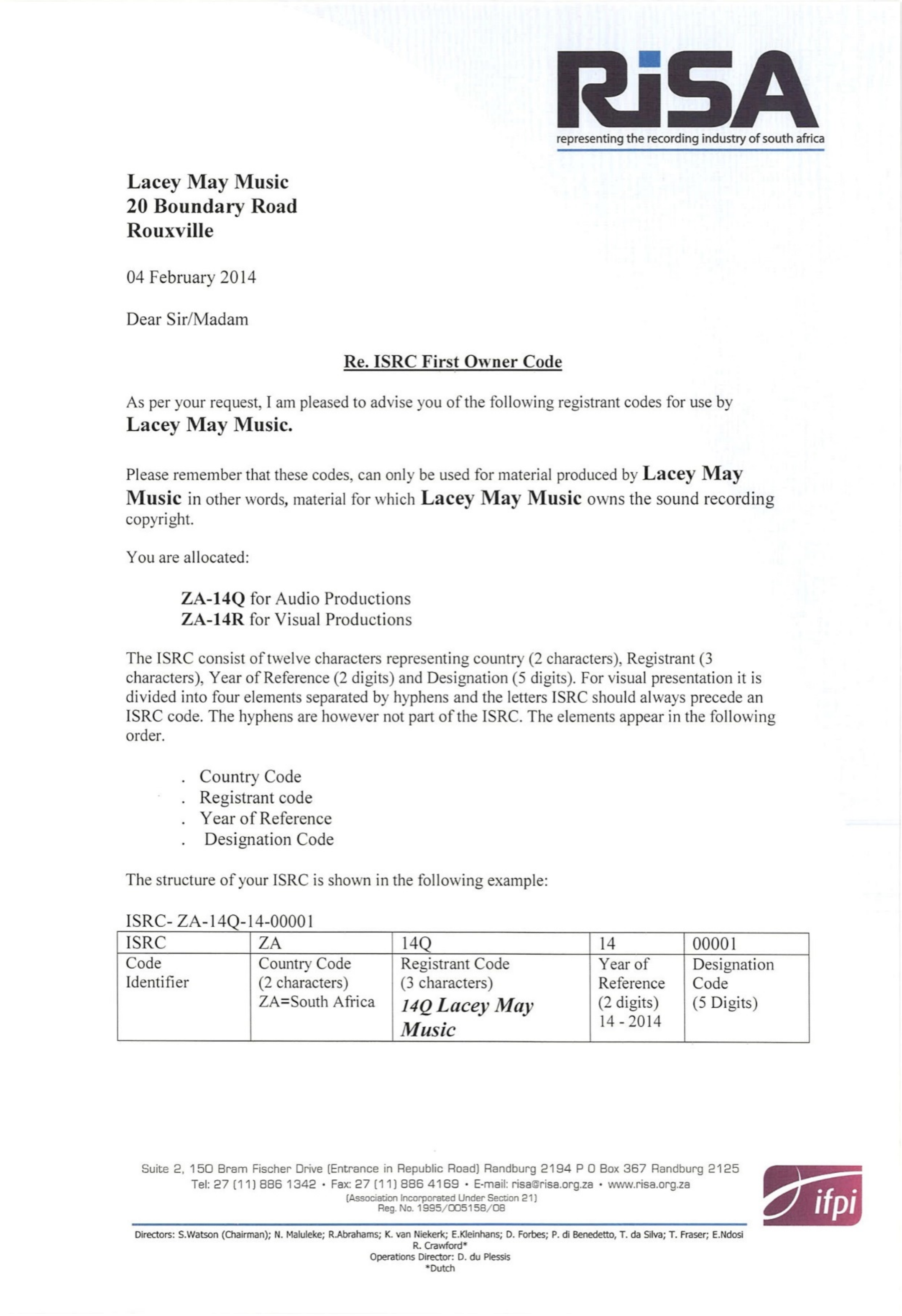
20 Pegasus
Sjampanje Street
Wilgeheuwel
1736

Banking Details :
G FORCE HOUSE CC
Standard Bank
Branch : Clearwater
Acc no. 410410640
Branch Code : 00120600

c 27 82 909 5046 **f** 086 621 5228 **e** gforcehouse@cilc.co.za
w www.gforcehouse.co.za **p** po box 26, wilgeheuwel, 1736, gauteng, sa

live music • sound & lighting •studio recording
arranging, producing & composing • movie scores • radio, tv & cell jingles
photography • graphic design

ISRC codes



representing the recording industry of south africa

Lacey May Music
20 Boundary Road
Rouxville

04 February 2014

Dear Sir/Madam

Re. ISRC First Owner Code

As per your request, I am pleased to advise you of the following registrant codes for use by **Lacey May Music.**

Please remember that these codes, can only be used for material produced by **Lacey May Music** in other words, material for which **Lacey May Music** owns the sound recording copyright.

You are allocated:

ZA-14Q for Audio Productions
ZA-14R for Visual Productions

The ISRC consist of twelve characters representing country (2 characters), Registrant (3 characters), Year of Reference (2 digits) and Designation (5 digits). For visual presentation it is divided into four elements separated by hyphens and the letters ISRC should always precede an ISRC code. The hyphens are however not part of the ISRC. The elements appear in the following order.

- Country Code
- Registrant code
- Year of Reference
- Designation Code

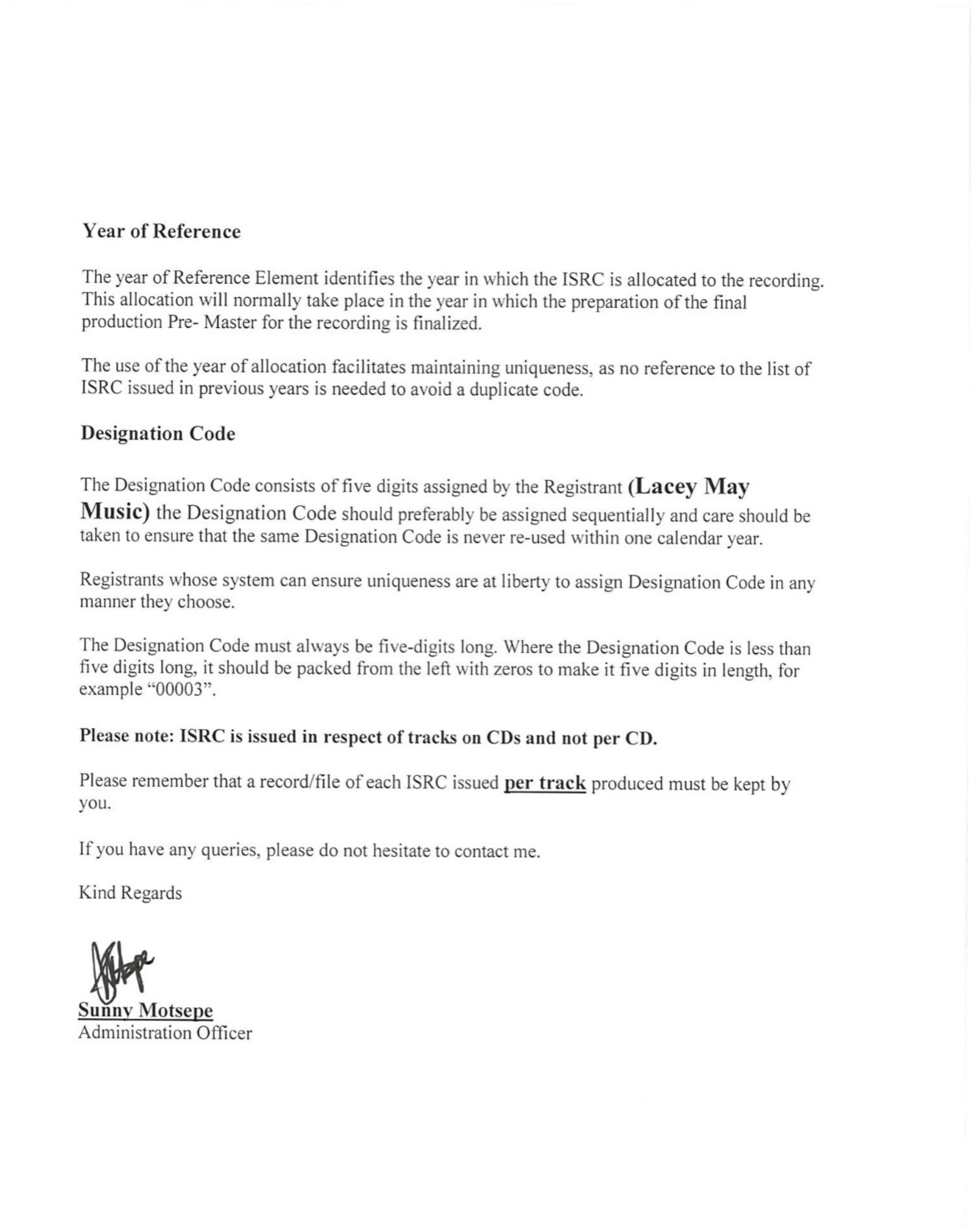
The structure of your ISRC is shown in the following example:

ISRC- ZA-14Q-14-00001

ISRC	ZA	14Q	14	00001
Code Identifier	Country Code (2 characters) ZA=South Africa	Registrant Code (3 characters) ***14Q Lacey May Music***	Year of Reference (2 digits) 14 - 2014	Designation Code (5 Digits)

Suite 2, 150 Bram Fischer Drive (Entrance in Republic Road) Randburg 2194 P O Box 367 Randburg 2125
Tel: 27 (11) 886 1342 • Fax: 27 (11) 886 4169 • E-mail: risa@risa.org.za • www.risa.org.za
(Association Incorporated Under Section 21)
Reg. No. 1995/005158/08

Directors: S.Watson (Chairman); N. Maluleke; R.Abrahams; K. van Niekerk; E.Kleinhans; D. Forbes; P. di Benedetto, T. da Silva; T. Fraser; E.Ndosi
R. Crawford*
Operations Director: D. du Plessis
*Dutch



Year of Reference

The year of Reference Element identifies the year in which the ISRC is allocated to the recording. This allocation will normally take place in the year in which the preparation of the final production Pre- Master for the recording is finalized.

The use of the year of allocation facilitates maintaining uniqueness, as no reference to the list of ISRC issued in previous years is needed to avoid a duplicate code.

Designation Code

The Designation Code consists of five digits assigned by the Registrant **(Lacey May Music)** the Designation Code should preferably be assigned sequentially and care should be taken to ensure that the same Designation Code is never re-used within one calendar year.

Registrants whose system can ensure uniqueness are at liberty to assign Designation Code in any manner they choose.

The Designation Code must always be five-digits long. Where the Designation Code is less than five digits long, it should be packed from the left with zeros to make it five digits in length, for example "00003".

Please note: ISRC is issued in respect of tracks on CDs and not per CD.

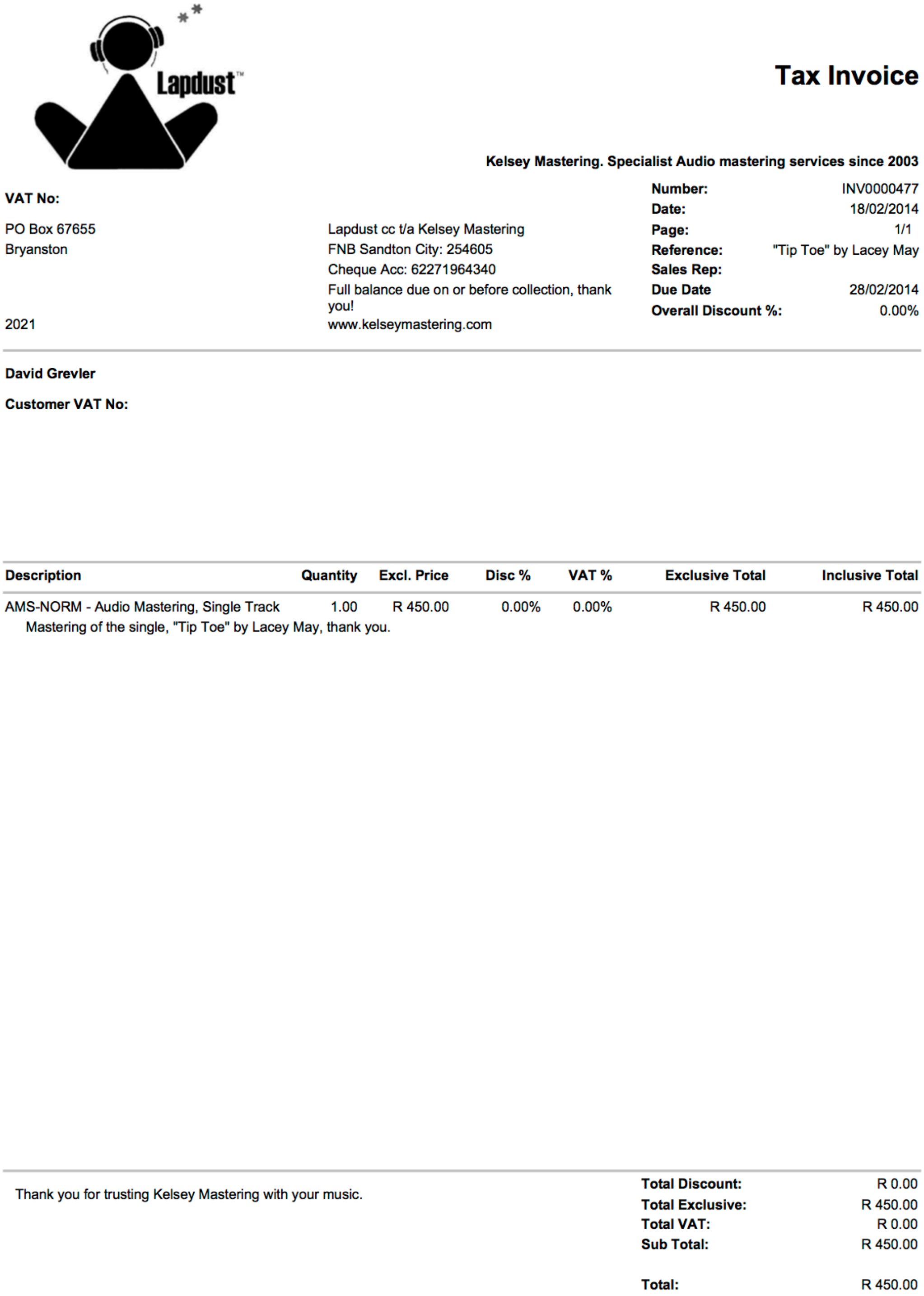
Please remember that a record/file of each ISRC issued **per track** produced must be kept by you.

If you have any queries, please do not hesitate to contact me.

Kind Regards

Sunny Motsepe
Administration Officer

Mastering



Lapdust™

Tax Invoice

Kelsey Mastering. Specialist Audio mastering services since 2003

VAT No:

PO Box 67655
Bryanston

2021

Lapdust cc t/a Kelsey Mastering
FNB Sandton City: 254605
Cheque Acc: 62271964340
Full balance due on or before collection, thank you!
www.kelseymastering.com

Number:	INV0000477
Date:	18/02/2014
Page:	1/1
Reference:	"Tip Toe" by Lacey May
Sales Rep:	
Due Date	28/02/2014
Overall Discount %:	0.00%

David Grevler

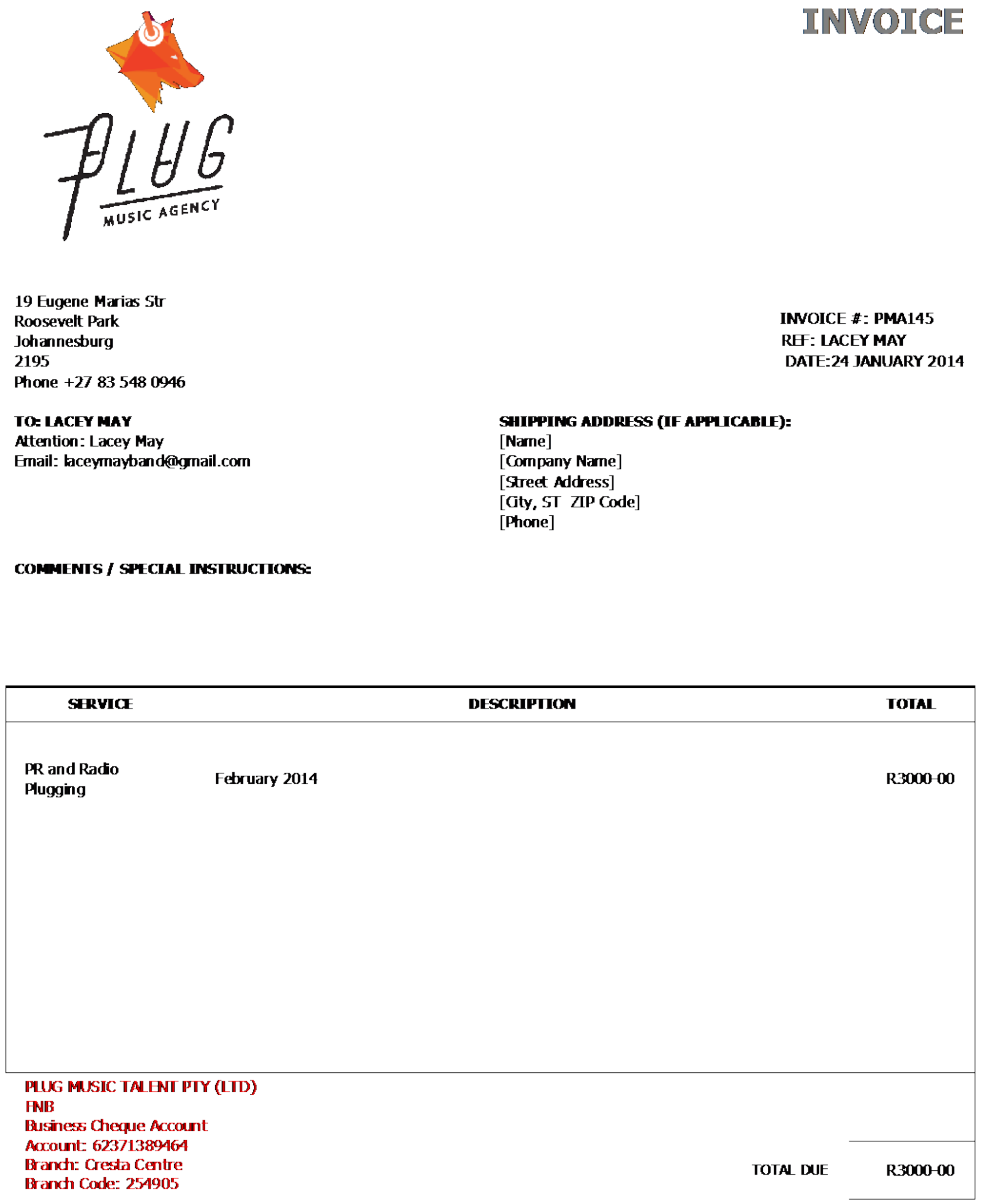
Customer VAT No:

Description	**Quantity**	**Excl. Price**	**Disc %**	**VAT %**	**Exclusive Total**	**Inclusive Total**
AMS-NORM - Audio Mastering, Single Track	1.00	R 450.00	0.00%	0.00%	R 450.00	R 450.00
Mastering of the single, "Tip Toe" by Lacey May, thank you.						

Thank you for trusting Kelsey Mastering with your music.

Total Discount:	R 0.00
Total Exclusive:	R 450.00
Total VAT:	R 0.00
Sub Total:	R 450.00
Total:	R 450.00

Marketing – Radio / Television Plugging



INVOICE

PLUG
MUSIC AGENCY

19 Eugene Marias Str
Roosevelt Park
Johannesburg
2195
Phone +27 83 548 0946

INVOICE #: PMA145
REF: LACEY MAY
DATE:24 JANUARY 2014

TO: LACEY MAY
Attention: Lacey May
Email: laceymayband@gmail.com

SHIPPING ADDRESS (IF APPLICABLE):
[Name]
[Company Name]
[Street Address]
[City, ST ZIP Code]
[Phone]

COMMENTS / SPECIAL INSTRUCTIONS:

SERVICE	DESCRIPTION	TOTAL
PR and Radio Plugging	February 2014	R3000-00
	TOTAL DUE	R3000-00

PLUG MUSIC TALENT PTY (LTD)
FNB
Business Cheque Account
Account: 62371389464
Branch: Cresta Centre
Branch Code: 254905

INVOICE

19 Eugene Marias Str
Roosevelt Park
Johannesburg
2195
Phone +27 83 548 0946

INVOICE #: PMA158
REF: LACEY MAY
DATE:24 FEBRUARY 2014

TO: LACEY MAY
Attention: Lacey May
Email: laceymayband@gmail.com

SHIPPING ADDRESS (IF APPLICABLE):
[Name]
[Company Name]
[Street Address]
[City, ST ZIP Code]
[Phone]

COMMENTS / SPECIAL INSTRUCTIONS:

SERVICE	DESCRIPTION	TOTAL
PR and Radio Plugging	March 2014	R3000-00

PLUG MUSIC TALENT PTY (LTD)
FNB
Business Cheque Account
Account: 62371389464
Branch: Cresta Centre
Branch Code: 254905

TOTAL DUE R3000-00

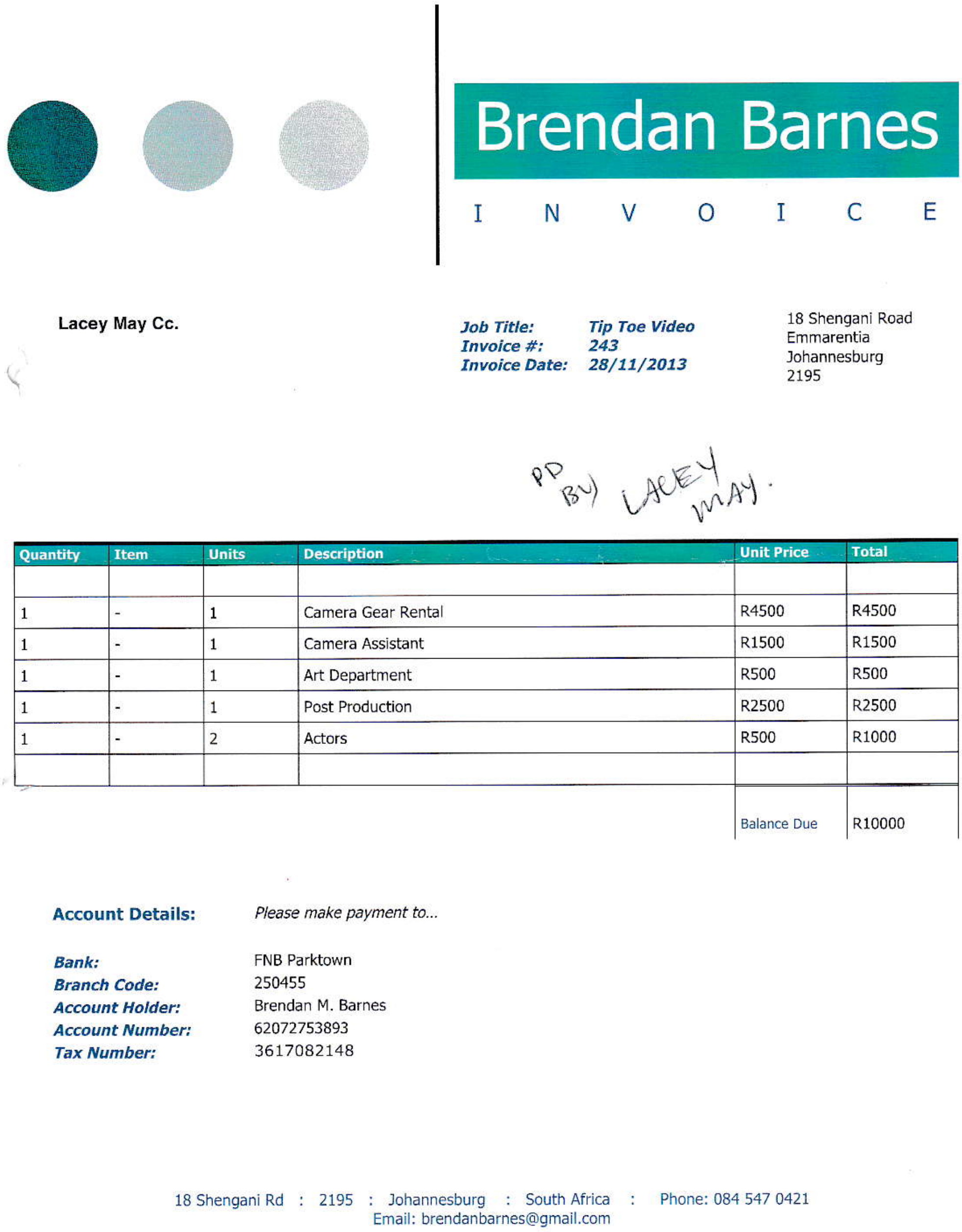
Total radio play from 2014 – 2016

Jarrod | South Africa - All Radio (Fri to Thu by SPINS) containing 'lacey may'
Airplay Sat 18 Jan 2014 - Thu 13 Oct 2016

Wks	Artist	Title	Plays	Impacts	Stns
	All titles		**207**	**17.11m**	
-	Lacey May	Tip Toe	207	17.11m	10

www.radiomonitor.com 13 October 2016 14:04 Page 1/1

Music Video



Brendan Barnes

INVOICE

Lacey May Cc.

Job Title: ***Tip Toe Video***
Invoice #: ***243***
Invoice Date: ***28/11/2013***

18 Shengani Road
Emmarentia
Johannesburg
2195

PD BY LACEY MAY.

Quantity	Item	Units	Description	Unit Price	Total
1	-	1	Camera Gear Rental	R4500	R4500
1	-	1	Camera Assistant	R1500	R1500
1	-	1	Art Department	R500	R500
1	-	1	Post Production	R2500	R2500
1	-	2	Actors	R500	R1000
				Balance Due	R10000

Account Details: *Please make payment to...*

Bank:	FNB Parktown
Branch Code:	250455
Account Holder:	Brendan M. Barnes
Account Number:	62072753893
Tax Number:	3617082148

18 Shengani Rd : 2195 : Johannesburg : South Africa : Phone: 084 547 0421
Email: brendanbarnes@gmail.com

63 Hill Street,Ferndale,
Randburg
www.videoafrica.co.za
VAT No. : 4170/184/263
Reg: CK99/18760/23

Video Africa
PO Box 2876
Honeydew 2040
info@videoafrica.co.za
Tel: 011 789 6502 / 781 2830
Fax: 011 781 2808

Tax Invoice

Date	24/02/14
Page	1
Document No	INA19661

CASH ACCOUNTS

Deliver to
CANDICE/KELLY
0714924933/0725450462

Account	Your Reference	Tax Exempt	Tax Reference	Sales Code	
CASH	KELLY	N			Exclusive

Code	Description	Quantity	Unit	Unit Price	Disc%	Tax	Nett Price
HDCAM	HDCAM/ TIP TOE	1.00	EA	1,500.00		14.00%	ZAR1,500.00

P.D BY
LACEY MAY.

PAID

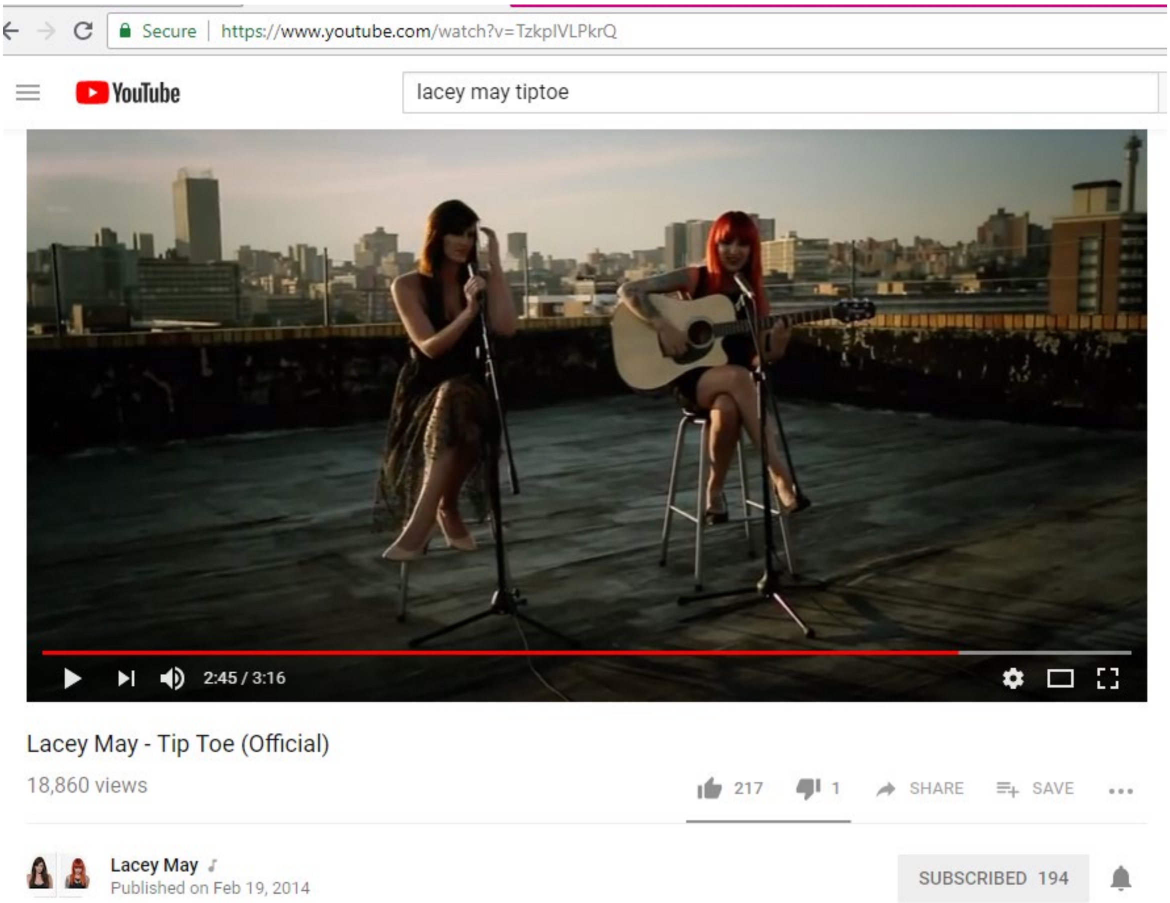
BANK: ABSA CRESTA
BR: 632005 ACC:908 315 8758
QUOTE CO. NAME ON INTERNET

Received in good order

Signed__________________ Date__________________

© Softline (Pty) Ltd

Sub Total		ZAR1,500.00
Discount @	0.00%	ZAR0.00
Amount Excl Tax		ZAR1,500.00
Tax		ZAR210.00
Total		ZAR1,710.00



Secure
https://www.youtube.com/watch?v=TzkpIVLPkrQ
YouTube
lacey may tiptoe
2:45 / 3:16
217
1
SHARE
SAVE
SUBSCRIBED 194

Lacey May - Tip Toe (Official)

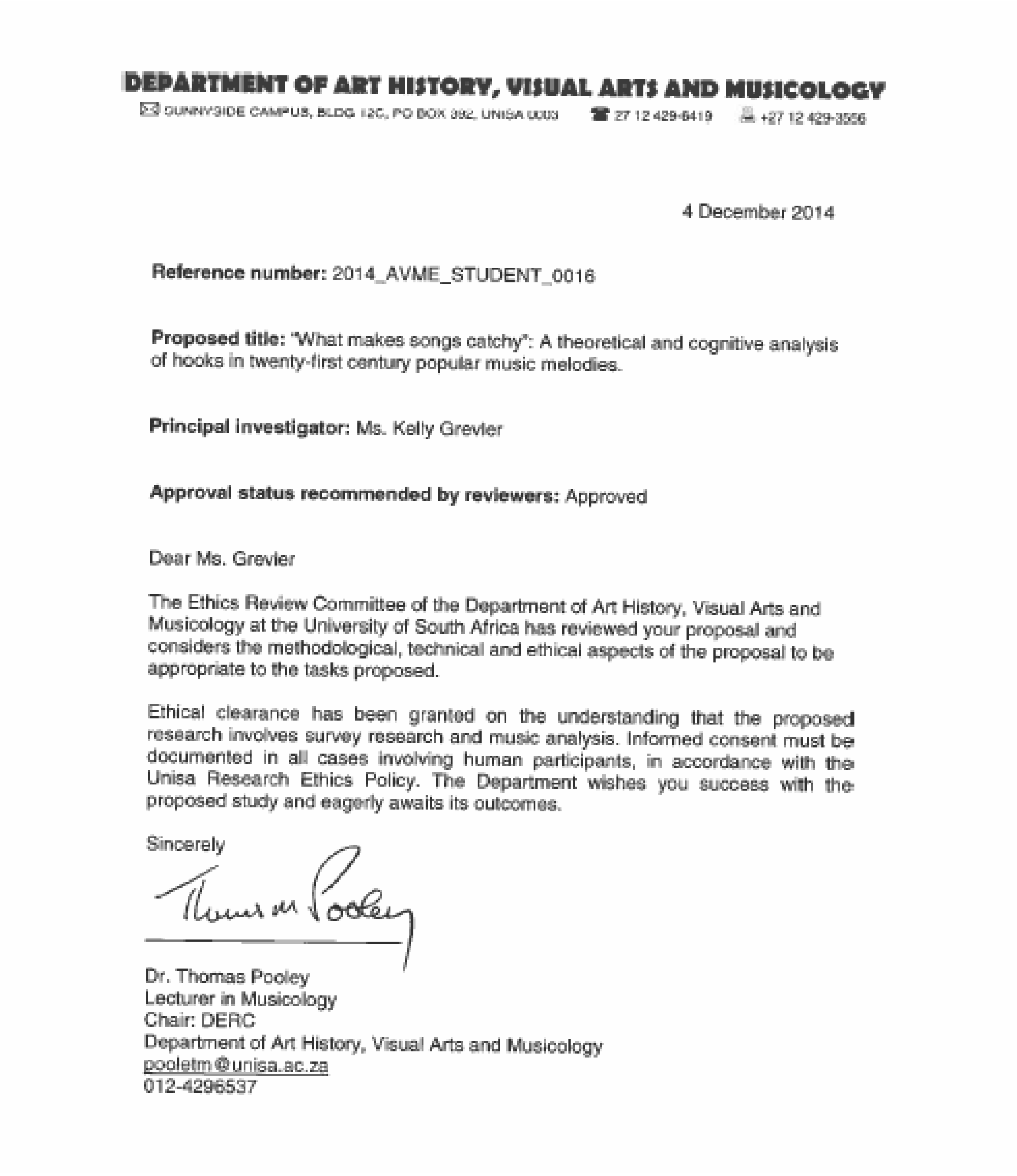
18,860 views

Lacey May

Published on Feb 19, 2014

Appendix C:

Ethical Clearance



DEPARTMENT OF ART HISTORY, VISUAL ARTS AND MUSICOLOGY
✉ SUNNYSIDE CAMPUS, BLDG 12C, PO BOX 392, UNISA 0003 ☎ 27 12 429-6419 📠 +27 12 429-3556

4 December 2014

Reference number: 2014_AVME_STUDENT_0016

Proposed title: "What makes songs catchy": A theoretical and cognitive analysis of hooks in twenty-first century popular music melodies.

Principal investigator: Ms. Kelly Grevler

Approval status recommended by reviewers: Approved

Dear Ms. Grevler

The Ethics Review Committee of the Department of Art History, Visual Arts and Musicology at the University of South Africa has reviewed your proposal and considers the methodological, technical and ethical aspects of the proposal to be appropriate to the tasks proposed.

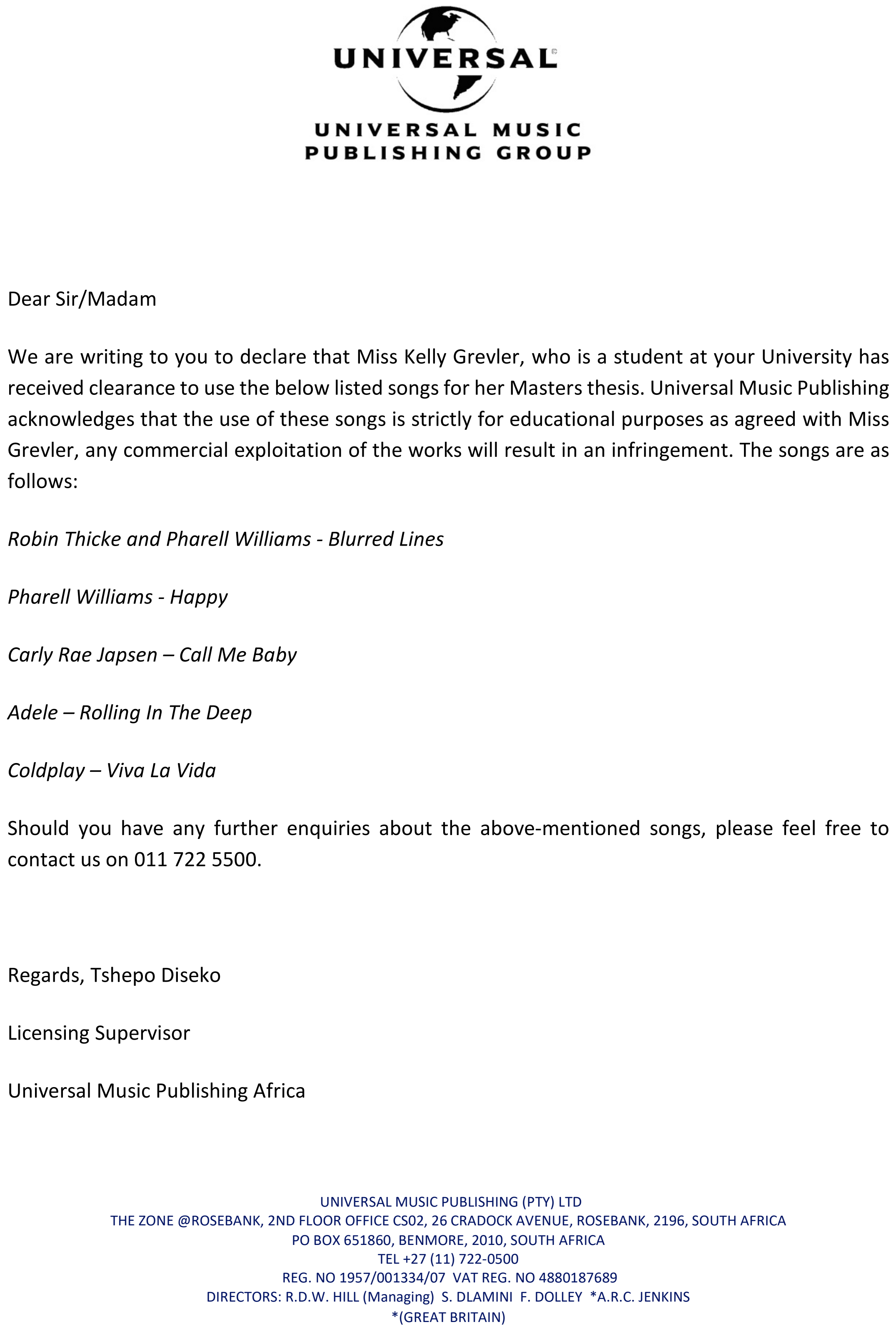
Ethical clearance has been granted on the understanding that the proposed research involves survey research and music analysis. Informed consent must be documented in all cases involving human participants, in accordance with the Unisa Research Ethics Policy. The Department wishes you success with the proposed study and eagerly awaits its outcomes.

Sincerely

Thomas M Pooley

Dr. Thomas Pooley
Lecturer in Musicology
Chair: DERC
Department of Art History, Visual Arts and Musicology
pooletm@unisa.ac.za
012-4296537

Appendix D:
Publishing Clearance



UNIVERSAL
UNIVERSAL MUSIC
PUBLISHING GROUP

Dear Sir/Madam

We are writing to you to declare that Miss Kelly Grevler, who is a student at your University has received clearance to use the below listed songs for her Masters thesis. Universal Music Publishing acknowledges that the use of these songs is strictly for educational purposes as agreed with Miss Grevler, any commercial exploitation of the works will result in an infringement. The songs are as follows:

Robin Thicke and Pharell Williams - Blurred Lines

Pharell Williams - Happy

Carly Rae Japsen – Call Me Baby

Adele – Rolling In The Deep

Coldplay – Viva La Vida

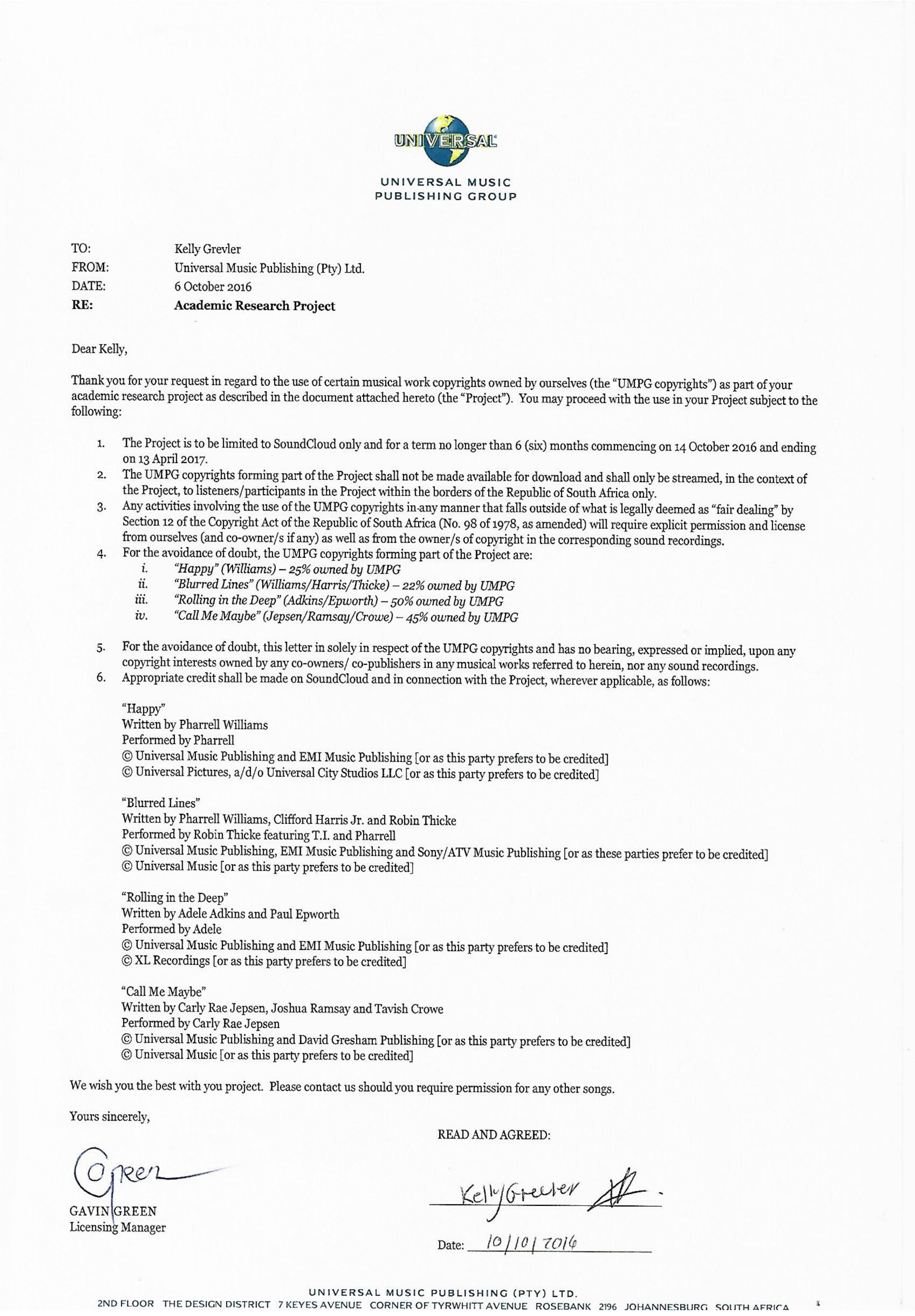
Should you have any further enquiries about the above-mentioned songs, please feel free to contact us on 011 722 5500.

Regards, Tshepo Diseko

Licensing Supervisor

Universal Music Publishing Africa

UNIVERSAL MUSIC PUBLISHING (PTY) LTD
THE ZONE @ROSEBANK, 2ND FLOOR OFFICE CS02, 26 CRADOCK AVENUE, ROSEBANK, 2196, SOUTH AFRICA
PO BOX 651860, BENMORE, 2010, SOUTH AFRICA
TEL +27 (11) 722-0500
REG. NO 1957/001334/07 VAT REG. NO 4880187689
DIRECTORS: R.D.W. HILL (Managing) S. DLAMINI F. DOLLEY *A.R.C. JENKINS
*(GREAT BRITAIN)



UNIVERSAL
UNIVERSAL MUSIC
PUBLISHING GROUP

TO: Kelly Grevler
FROM: Universal Music Publishing (Pty) Ltd.
DATE: 6 October 2016
RE: Academic Research Project

Dear Kelly,

Thank you for your request in regard to the use of certain musical work copyrights owned by ourselves (the "UMPG copyrights") as part of your academic research project as described in the document attached hereto (the "Project"). You may proceed with the use in your Project subject to the following:

1. The Project is to be limited to SoundCloud only and for a term no longer than 6 (six) months commencing on 14 October 2016 and ending on 13 April 2017.
2. The UMPG copyrights forming part of the Project shall not be made available for download and shall only be streamed, in the context of the Project, to listeners/participants in the Project within the borders of the Republic of South Africa only.
3. Any activities involving the use of the UMPG copyrights in any manner that falls outside of what is legally deemed as "fair dealing" by Section 12 of the Copyright Act of the Republic of South Africa (No. 98 of 1978, as amended) will require explicit permission and license from ourselves (and co-owner/s if any) as well as from the owner/s of copyright in the corresponding sound recordings.
4. For the avoidance of doubt, the UMPG copyrights forming part of the Project are:
   i. *"Happy" (Williams) – 25% owned by UMPG*
   ii. *"Blurred Lines" (Williams/Harris/Thicke) – 22% owned by UMPG*
   iii. *"Rolling in the Deep" (Adkins/Epworth) – 50% owned by UMPG*
   iv. *"Call Me Maybe" (Jepsen/Ramsay/Crowe) – 45% owned by UMPG*

5. For the avoidance of doubt, this letter in solely in respect of the UMPG copyrights and has no bearing, expressed or implied, upon any copyright interests owned by any co-owners/ co-publishers in any musical works referred to herein, nor any sound recordings.
6. Appropriate credit shall be made on SoundCloud and in connection with the Project, wherever applicable, as follows:

"Happy"
Written by Pharrell Williams
Performed by Pharrell
© Universal Music Publishing and EMI Music Publishing [or as this party prefers to be credited]
© Universal Pictures, a/d/o Universal City Studios LLC [or as this party prefers to be credited]

"Blurred Lines"
Written by Pharrell Williams, Clifford Harris Jr. and Robin Thicke
Performed by Robin Thicke featuring T.I. and Pharrell
© Universal Music Publishing, EMI Music Publishing and Sony/ATV Music Publishing [or as these parties prefer to be credited]
© Universal Music [or as this party prefers to be credited]

"Rolling in the Deep"
Written by Adele Adkins and Paul Epworth
Performed by Adele
© Universal Music Publishing and EMI Music Publishing [or as this party prefers to be credited]
© XL Recordings [or as this party prefers to be credited]

"Call Me Maybe"
Written by Carly Rae Jepsen, Joshua Ramsay and Tavish Crowe
Performed by Carly Rae Jepsen
© Universal Music Publishing and David Gresham Publishing [or as this party prefers to be credited]
© Universal Music [or as this party prefers to be credited]

We wish you the best with you project. Please contact us should you require permission for any other songs.

Yours sincerely,

READ AND AGREED:

Green

Kelly Grevler

GAVIN GREEN
Licensing Manager

Date: 10/10/2016

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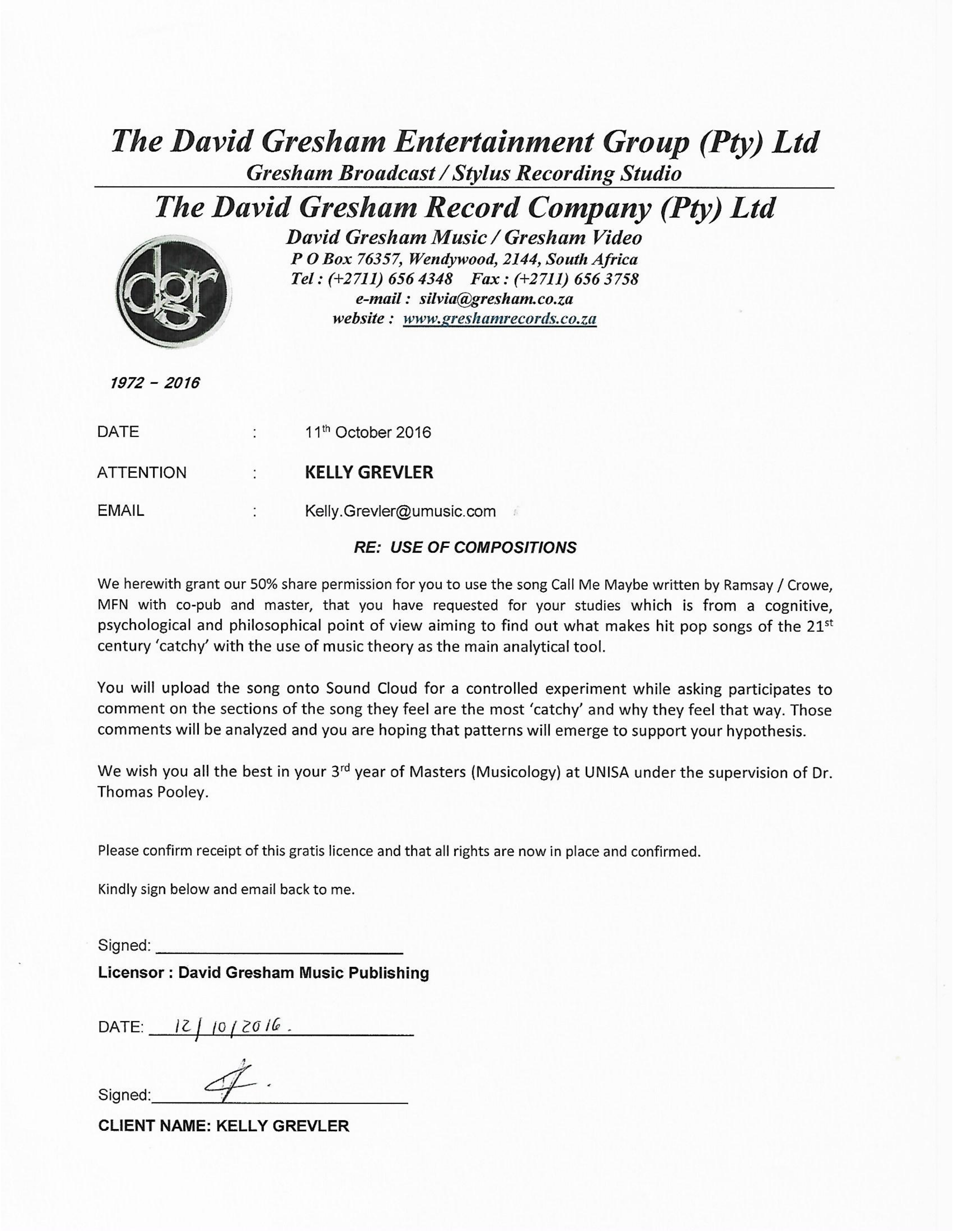

The David Gresham Entertainment Group (Pty) Ltd
Gresham Broadcast / Stylus Recording Studio

The David Gresham Record Company (Pty) Ltd
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e-mail : silvia@gresham.co.za
website : www.greshamrecords.co.za

1972 – 2016

DATE : 11th October 2016

ATTENTION : **KELLY GREVLER**

EMAIL : Kelly.Grevler@umusic.com

RE: USE OF COMPOSITIONS

We herewith grant our 50% share permission for you to use the song Call Me Maybe written by Ramsay / Crowe, MFN with co-pub and master, that you have requested for your studies which is from a cognitive, psychological and philosophical point of view aiming to find out what makes hit pop songs of the 21st century 'catchy' with the use of music theory as the main analytical tool.

You will upload the song onto Sound Cloud for a controlled experiment while asking participates to comment on the sections of the song they feel are the most 'catchy' and why they feel that way. Those comments will be analyzed and you are hoping that patterns will emerge to support your hypothesis.

We wish you all the best in your 3rd year of Masters (Musicology) at UNISA under the supervision of Dr. Thomas Pooley.

Please confirm receipt of this gratis licence and that all rights are now in place and confirmed.

Kindly sign below and email back to me.

Signed: ____________________________

Licensor : David Gresham Music Publishing

DATE: 12/10/2016.

Signed: ____________________________

CLIENT NAME: KELLY GREVLER