

**Title:** A descriptive study of the relationship between listening to music and exercise for South African individuals

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**Declaration:**

I hereby declare that the Research Report submitted for the Bachelor of Arts Honours in Psychology degree to The Independent Institute of Education is my own work and has not previously been submitted to another University or Higher Education Institution for degree purposes.

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## **ABSTRACT**

Contemporary literature around the relationship between listening to music and exercise is quantitative and focused on the physiological effects of using music during exercise. There is a lack of literature around the psychological effects and motivation of music-listening in the context of exercise. The purpose of this research study was to gain a qualitative understanding of and expand on the knowledge about the psychological relationship between listening to music and exercise regarding the conditions of intrinsic motivation according to self-determination theory.

This study made use of semi-structured interviews as a means of in-depth data collection about the subjective experiences of participants. The sample consisted of one female and two male South African individuals who listen to music when exercising, engage in regular exercise, speak English, and live in Kwa-Zulu Natal. Data was analysed thematically.

Significant findings of this study were the perceived psychological effects of listening to music being improved endurance, energy, exercise ability, motivation, mood and mental state, focus, adrenaline, control, confidence, and enjoyability. Moreover, these effects, as well as the perceived ability to endure exercise, distraction effects of music, and the intrinsic motivation provided by music, were found as the psychological benefits of music-listening during exercise.

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# **1. INTRODUCTION**

## **1.1. Contextualisation**

Barney, Gust and Liguori (2012) noted that music is a prominent part of daily life because it can be found in vehicles, workplaces, homes, media, and gymnasiums. More than three quarters of participants in one study listened to music while exercising (Hallett & Lamont, 2017). The researcher noticed the widespread use of music-listening at gymnasiums and wondered whether music served a purpose that enhanced one's exercise experience. Hallett and Lamont (2017) also note music is widely used during workouts. This shows there is a growing interest about the relationship between music and exercise, and other research showed an expanding body of knowledge about the effects of music on exercise. For example, music can increase motivation (Hallett & Lamont, 2017) and reduce monotony (Hallett & Lamont, 2017). Priest and Karageorghis (2008) acknowledge it is widely accepted that music improves exercise performance. The present study was thus interested in exploring what role music plays in exercise, and whether music is a mediator in the relationship between motivation and exercise? Motivation is an important part of any exercise experience, and the researcher was interested in whether music affects motivation, and whether this motivation is extrinsic or intrinsic; as this is not clear in the literature.

## **1.2. Rationale**

This research study is relevant to understand how people create meaning from the music they listen to and why they decide to listen to it during exercise as opposed to not listening to music while they exercise. Gym companies may be interested in reading these findings to influence whether they play music at the facility, and the type of music they should play when clients are exercising. For example, fitness facilities in the United Kingdom, United States, Australia and Europe were motivated by previous researchers to broadcast their music at a level that is not intrusive for those listening to their own music using headphones (Hallett & Lamont, 2017). This research study may also be relevant to individuals who exercise, as it could encourage or discourage them from listening to music while they exercise depending on what psychological effects of listening to music are observed in this research. This research may be useful to promote health by incorporating music into exercise programmes to increase its enjoyability (Campbell & White, 2015). Enjoying exercise due to music can lead to better adherence to exercise plans (Campbell & White, 2015). As music can be a motivating factor and make exercise easier, more enjoyable and allow individuals to perform at a higher intensity, listeners will reach their fitness goals

sooner, which leads to more motivation (Barney et al., 2012). This research study may also provide knowledge about whether music changes the perception of exercise. Campbell and White (2015) found that individuals are more likely to exercise if they have a positive experience, and it was proposed that exercising with music achieves this. This research study therefore explored the experiences of individuals who listen to music during exercise, and the meaning-making of individuals about psychological responses to music-listening. Lastly, this study explored this phenomenon using self-determination theory, which contributes to the understanding of this theory with a new application to the music, motivation, and exercise context.

### **1.3. Problem Statement**

Most literature around the relationship between listening to music and exercise is quantitative. Priest and Karageorghis (2008) noted that the psychophysical effects of music during exercise has been limited to positivistic and experimental research. At present, there are few qualitative studies that explore why people listen to music during exercise. This means that there is a lack of subjective, in-depth knowledge only achieved through qualitative studies (Priest & Karageorghis, 2008) For example, Campbell and White (2015), investigated how music affects pleasantness, arousal, and fatigue in exercise. Hallett and Lamont (2017) then studied music's effects on exercise intensity, perceived exertion, mood, and strength. This shows that previous literature is mostly focused on the physiological effects of using music during exercise, which poses a problem. The research problem that this study contributes towards solving is a lack of detailed description and subjective understanding of the psychological effects and motivation of music-listening during exercise, specifically in relation to the satisfaction of competence, autonomy, and relatedness implicated in intrinsic motivation.

### **1.4. Purpose Statement**

The purpose of this research study is to gain an in-depth understanding of and expand on the existing body of knowledge about the psychological relationship between listening to music and exercise, as well as to expand on the body of literature around motivation, specifically with regard to self-determination theory of motivation, and the psychological effects of listening to music during exercise.

### **1.5. Research Questions**

#### ***1.5.1. Primary research question***

- Why do individuals listen to music during periods of exercise?

### **1.5.2. Secondary research questions**

- What are the subjective psychological effects that listening to music during exercising has on individuals?
- What is the relationship between motivation and music?
- To what extent does music influence autonomy, competence, and relatedness during exercise?

## **1.6. Research Objectives**

- To determine why individuals listen to music during periods of exercise.
- To explore the perceived psychological effects of listening to music.
- To explore the relationship between motivation and music.
- To explore the extent to which music mediates the fulfilment of autonomy, competence, and relatedness to foster intrinsic motivation.

## **2. LITERATURE REVIEW**

### **2.1. Theoretical Foundation**

Self-determination theory is a theory of development, wellness, and motivation (Deci & Ryan, 2008). The theory distinguishes between intrinsic and extrinsic motivations for physical activity (Ryan, Williams, Patrick & Deci, 2009), as well as the social factors that increase or decrease the types of motivation (Deci & Ryan, 2008). As such, physical activity is rewarding and contributes to happiness if one's psychological needs are satisfied (Ryan et al., 2009). The main tenet of this theory is that physical activity can be intrinsically or extrinsically motivated (Ryan et al., 2009). This theory can be applied to the research study by determining what motivates people during exercise, whether music can be a motivation factor, whether music is intrinsically or extrinsically motivating, and how music is intrinsically or extrinsically motivating.

Motivation refers to the tendency for organisms to act on their environment, and develop and apply their skills (Ryan et al., 2009). Performing activities due to intrinsic motivation is because of an interest in the activity itself (Gagné & Deci, 2005). These activities need no extra incentives to participate (Ryan et al., 2009). According to this type of motivation, individuals may listen to music during exercise because of the pleasure and satisfaction that listening to music provides. Intrinsic motivation holds that individuals tend to move, manipulate, discover, and test themselves, which shows an intrinsic ability to cope with the

demands of the environment (Ryan et al., 2009). Satisfaction is a characteristic of intrinsically motivating activities, and this aspect of self-determination theory holds that people engage in physical activity because they are challenging and of interest (Ryan et al., 2009). Intrinsic goals include affiliation and personal development (Deci & Ryan, 2008). These goals are those that are, in themselves, satisfying to achieve, such as maintaining health (Ryan et al., 2009).

For an individual to be intrinsically motivated, one needs to satisfy the needs for competence, autonomy, and relatedness (Ryan et al., 2009). Satisfaction of these needs predicts psychological well-being (Deci & Ryan, 2008). Competence refers to the satisfaction of gaining skills (Ryan et al., 2009). When positive feedback is given, competence is increased (Ryan et al., 2009). For example, when exercising at a gymnasium, competence may refer to learning how to perform a squat with the proper form. This increases the feeling of satisfaction, and therefore contributes to a sense of intrinsic motivation, because a skill has been learnt. Autonomy is increased when one experiences a sense of control and one's agency is acknowledged (Ryan et al., 2009). When people feel in control, they experience energy to act (Deci & Ryan, 2008). Choosing to listen to music could potentially provide feelings of autonomy, which can prompt physical exercise by fostering intrinsic motivation. Competence and autonomy are important for intrinsic motivation (Gagné & Deci, 2005). Positive feedback fosters intrinsic motivation by creating a sense of competence and autonomy by engaging in challenging activities and taking responsibility (Gagné & Deci, 2005). The last need is a sense of relatedness to the environment, which is improved by feelings of warmth, care, and involvement (Ryan et al., 2009). For example, having a 'gym buddy' during exercise can increase one's perception of relatedness to the exercise environment. Music during exercise can potentially enhance the environment and improve involvement, thus satisfying the need for relatedness. Self-determination theory proposes that intrinsic motivation is influenced by experiences of autonomy, competence, and relatedness and the satisfaction of these needs (Ryan et al., 2009).

Exercise can be extrinsically motivated if people exercise to improve, for example, their health, physical appearance, or performance (Ryan et al., 2009). Acts are performed for a specific outcome such as an external reward or to avoid punishment (Ryan et al., 2009). This is one reason for why individuals exercise. Extrinsic goals, for example an attractive image, wealth, or fame (Deci & Ryan, 2008) provide the motivation for certain activities that are not inherently motivating (Ryan et al., 2009). According to this type of motivation,

individuals may listen to music during exercise to achieve external goals, for example, to avoid obesity. Satisfaction comes from extrinsic consequences of the activity, rather than the activity itself (Gagné & Deci, 2005). There is a relationship between extrinsic goals and lower autonomy levels (Ryan et al., 2009). The choice to listen to music may offer one a sense of control over their physical activity. This choice leads to more intrinsic motivation (Barney et al., 2012). Intrinsic motivation is the other reason individuals exercise, being that they enjoy the sense of wellness they acquire, as well as the satisfaction of autonomy, competence, and relatedness. Self-determination theory proposes that individuals who pursue activities while they are intrinsically motivated are more persistent and have a better well-being (Ryan et al., 2009).

Within the framework of self-determination theory, the theory of subjective energy arises, which highlights vitality as a function of rest and fatigue (Ryan et al., 2009). This sub-theory poses that activities that do not fulfil psychological needs reduce energy, and those that satisfy needs maintain it (Ryan et al., 2009). Therefore, if music fulfils psychological needs, it may be perceived as energising and, therefore, motivating. Physical activity is associated with vitality but only when autonomy is present (Ryan et al., 2009). Self-determination theory helps to frame the psychological effects of listening to music and how this would affect exercise, as well as how control and vitality can be fostered during exercise. In summary, intrinsic motivation can improve performance when competence, autonomy, and relatedness are satisfied. This research is interested in the extent to which music contributes towards these needs being met, and therefore, the extent to which music can foster intrinsic motivation and improve exercise performance.

## **2.2. Critical Review of Literature**

Music is an important addition to exercising, according to Campbell and White (2015). There are various reasons people choose to listen to music while they exercise, such as to work out at a higher intensity, for a longer duration, to make exercise more pleasant or just because there is enjoyment in listening to music (Barney et al., 2012). The purpose of this literature review is to describe what is known about the effects of music on people when they are exercising. The literature will be organised into effects of endurance and duration, effects of autonomy, motivation and mood, distraction and dissociation and characteristics of music and its effects. This will be done to show what is known about music and exercise broadly and in terms of self-determination theory.

### **2.2.1. Exercise endurance and duration**

People listen to music during exercise to increase exercise intensity (Barney et al., 2012) and to increase performance (Barney et al., 2012; Sugiharto, 2009). Listening to music can increase the ability to endure physical activity (Schwartz, Fernhall & Plowman, 1990), especially if one is listening to motivational music (Priest & Karageorghis, 2008). One participant in a study by Priest and Karageorghis (2008) explained that when a good song comes on when an individual is about to stop exercising, it makes them feel like they should continue because music can motivate individuals to persist in their exercises.

Schwartz et al. (1990) found that music improved bicycle performance specifically, but no difference between the music and no music groups was found on general exercise performance. Schwartz et al. (1990) proposed that these findings could be due to a person's response to be music being individual, so if a person dislikes music it will not improve the quality of their activities. This highlights the importance of using a qualitative research study to unpack subjectivity and in-depth understanding of individual perceptions of music and exercise. Another study found that music with a tempo of between 140-180 beats per minute can increase exercise intensity (Elliot, 2007). Hallett and Lamont (2017) found tempo influences the speed of movement on a treadmill as well as a stationary bike. This may be important to note for this study, that characteristics of music play a role in determining different psychological effects in individuals. Vigour is also increased during exercise when listening to music (Campbell & White, 2015). It was also found that these effects were stronger for untrained participants (Barney et al., 2012). This shows that effort is increased especially for those that are new to exercise. This can potentially point to the motivational nature of music to encourage exercise. In contrast, it is proposed that those training at a higher-level need music that is greater in its stimulation properties and that those who exercise as recreation use music as a comfort (Priest & Karageorghis, 2008).

Music can also increase productivity during exercise (Campbell & White, 2015) and allow people to exercise for a longer duration (Barney et al., 2012) due to its ability to alter the perception of time during exercise (Priest & Karageorghis, 2008). Overall, music can be found to increase performance during exercise (Barney et al., 2012; Sugiharto, 2009), allow listeners to withstand higher intensity exercise (Schwartz et al., 1990), and to exercise for a longer duration (Barney et al., 2012; Priest & Karageorghis, 2008) by changing perceptions of time (Priest & Karageorghis, 2008). Understanding this can help provide the basis for the motivations behind people listening to music, which was unpacked by conducting this research study and describing the unique perceptions of this relationship between music and exercise.

### **2.2.2. Motivation**

Listening to music can make exercise seem easier and more enjoyable (Barney et al., 2012; Schwartz et al., 1990). In terms of self-determination theory, this is interesting because females may be more extrinsically motivated which might show in this research study. Music is perceived as motivational depending on rhythm, harmony, cultural influence, and association to memories (Priest & Karageorghis, 2008; Sugiharto, 2009). Faster music is perceived as more enjoyable and more motivational (Hallett & Lamont, 2017; Priest & Karageorghis, 2008). Rhythm was found to increase activation (Priest & Karageorghis, 2008) and initiate synchronisation (Priest, Karageorghis & Sharp, 2004). Females respond more to rhythm than males, but males respond more to exemplified bass (Priest et al., 2004). Rhythm was found to improve performance on cardio exercises and provide the motivation to endure the discomfort associated with machine exercises (Priest et al., 2004). If exercise is perceived as easier when listening to music, then incorporating music into exercise programs could increase motivation and adherence (Potteiger, Schroeder & Goff, 2000). Those who exercised showed higher enjoyment when listening to music, and rated exercise as more enjoyable than those who did not listen to music (Campbell & White, 2015). However, music needs to be fun and appropriate for the listener to elicit psychological effects (Schwartz et al., 1990). For those who dislike music, there will be no psychological pleasure or improvements during exercise (Schwartz et al., 1990). With regards to self-determination theory, music that makes exercise enjoyable can show that music mediates the relationship between a person and the activity they are performing. Furthermore, music can have different motivational properties at different times of the day (Priest & Karageorghis, 2008). These findings are useful as the foundation for this research study due to its interest in motivation, and specifically, intrinsic motivation according to self-determination theory. The motivational nature of music could potentially be a reason why people listen to music during exercise.

### **2.2.3. Sense of autonomy**

An important consideration noted by Barney et al (2012) is the use of personal music players during exercise that allow listeners to play their own music, which can increase motivation. Most gym users choose to listen to their own music rather than the music played throughout the facility (Hallett & Lamont, 2017). Hallett and Lamont (2017) further suggested that having control over the choice of music is the reason for increased mood during exercise. Listening to music can increase arousal during exercise (Elliott, 2007) especially when listening to self-selected music (Hallett & Lamont, 2017). The preference for self-selected music can be

interpreted in terms of self-determination theory and, more specifically, autonomy as it underlies intrinsic motivation (Priest et al., 2004). This means that if music satisfies the need for control, one may be more motivated to exercise. Choosing what music to listen to during exercise may decrease stress levels and create a relaxed, positive environment (Sugiharto, 2009). In terms of this research study, this was be investigated further to determine whether music does satisfy the need for autonomy, and therefore, whether music contributes to motivation? The discouraging factor of using personal music players is using headphones or earbuds which can be uncomfortable and reduce the motivation to exercise (Barney et al., 2012). In a study done by Barney et al (2012), 66% of respondents agreed that music players get in the way of exercising (Barney et al., 2012). In summary, music can also provide a sense of control (Hallett & Lamont, 2017) which can improve mood (Barney et al., 2012; Campbell & White, 2015; Hallett & Lamont, 2017; Priest & Karageorghis, 2008; Sugiharto, 2009) and increase motivation (Priest & Karageorghis, 2008). A sense of control, which fosters intrinsic motivation, may provide an understanding about why individuals listen to music during exercise.

#### ***2.2.4. Mood***

Listening to music can also improve one's mood while exercising, which fosters a positive attitude about exercise (Barney et al., 2012; Campbell & White, 2015; Hallett & Lamont, 2017; Priest & Karageorghis, 2008; Sugiharto, 2009). A positive attitude about exercise creates feelings of involvement, which enhances the exercise environment. This shows relatedness to one's environment, as proposed by self-determination theory, because mood and attitude is affected by music in the exercise environment. Campbell and White (2015) found that participants who listened to music during exercise showed better affect, less fatigue, and higher levels of arousal after exercise than those who had not listened to music. Music had a stimulating effect on participants in one study (Priest & Karageorghis, 2008). Post-exercise affect was improved when listening to music with a higher tempo (Elliot, 2007). This, again, points to the differences in effects in mood due to differences in music. Furthermore, exercise combined with music leads to increased energy and a more positive mood than the effects of just exercise alone (Campbell & White, 2015). These findings relate to changes in mood due to music listening, which may be a secondary reason for listening to music during exercise.

#### ***2.2.5. Distraction and dissociation***

The core focus of this study is understanding the psychological effects of music on people engaging in exercise. People choose to listen to music to manipulate their thoughts and distract them from one's psychological perception of effort (Barney et al., 2012; Potteiger et al., 2000; Schwartz et al., 1990). Exercise can seem easier when listening to music because music can provide a distraction from the intensity level (Barney et al., 2012). Music also distracts from the discomfort, (Elliott, 2007; Priest & Karageorghis, 2008) fatigue (Priest & Karageorghis, 2008), and unpleasant exhaustion associated with exercise (Priest & Karageorghis, 2008). Individuals who exercise dissociate so that they do not focus on the discomfort (Potteiger et al., 2000), exertion (Potteiger et al., 2000), and pain (Hallett and Lamont, 2017). It was also suggested that choosing one's own music rather than a facility's music contributes to the reduction of pain (Hallett & Lamont, 2017). This links back to self-determination theory in terms of the perception of choice fostering a sense of autonomy for the individual, and this concept was further explored in this study to determine whether autonomy is linked to a psychology perception of distraction from pain?

The rate of perceived exertion can be attributed to physiological as well as psychological factors (Potteiger et al., 2000). Music during exercise was found to reduce the rating of perceived exertion (Barney et al., 2012; Campbell & White, 2015; Hallett & Lamont, 2017; Priest & Karageorghis, 2008; Schwartz et al., 1990). The rate of perceived exertion was found to be lower for those listening to music during exercise, regardless of the type of music, than those who were not listening to music (Barney et al., 2012). This is interesting because it suggests that the type of music does not matter to influence the rate of perceived exertion. It was found that for strength exercises, self-selected music increases stamina and decrease one's rate of perceived exertion (Hallett & Lamont, 2017). Music reduces the perception of fatigue (Sugiharto, 2009). Campbell & White (2015) acknowledged this fact found in other research, but their study found no evidence of this. Instead, their study found lower levels of fatigue in those who exercised with music, which points to a potential physiological effect (Campbell & White, 2015). This points to the subjectivity of the psychological effects of music, which this study aimed to gather knowledge about.

Distraction is when the individual places more focus on external stimuli like music than internal perceptions such as fatigue (Elliott, 2007). Because music is seen as a distraction, music may be argued as to foster extrinsic motivation according to self-determination theory. Listening to music during exercise could also be used to dissociate from the tediousness of exercise (Hallett & Lamont, 2017). This suggests it is not clear in the existing research

whether music fosters intrinsic or extrinsic motivation, which is what this research study is aiming to distinguish by using self-determination theory.

Schwartz et al. (1990) found that psychological perceptions were not altered by listening to music during exercise. Elliot (2007) suggested that lyrics, melody, and harmony can direct attention away from internal signals, and cause dissociation. Elliot (2007) also suggested that faster music exacerbates dissociation and Potteiger et al. (2000) found that it increases arousal as well. However, it was also found that arousal occurred irrespective of the type of music that was listened to, and as such, tempo was found to have no effect on arousal in one study (Elliott, 2007). In this theme, it was discussed that music distracts from effects of exercise (Elliott, 2007; Priest & Karageorghis, 2008; Potteiger et al., 2000) and can reduce the perception of pain (Hallett & Lamont, 2017). Understanding the distraction and dissociation effects of music can help understand why people listen to music, but it is still unclear as to whether music fosters motivation, and furthermore, whether it fosters intrinsic or extrinsic motivation.

#### ***2.2.6. Characteristics of music***

There are different characteristics, such as the type and volume of music that create different psychological effects on individuals during exercise. One study found the tempo, volume and style of music are considered important for people when exercising, (Barney et al., 2012) and another found intrinsic qualities of music such as speed, style, rhythm, melody and harmony as well as extrinsic qualities such as associations and background influence the type of music people listen to (Hallett & Lamont, 2017). This needs to be explored more in this study, to describe whether specific music has more motivational qualities than another.

One study found that the most popular types of music chosen to listen to during times of exercise were hip hop, rock, pop, and country (Barney et al., 2012) while another found that rock, indie and heavy metal were the preferences of participants (Hallett & Lamont, 2017). Loud music is perceived as more motivational (Priest et al., 2004) and pleasant (Sugiharto, 2009). Exercising to loud music increases heart rate when compared to exercising with quieter music, but all music influences cortisol and endorphin secretion (Sugiharto, 2009). There is a preference for upbeat, fast, loud, and motivational music when exercising (Barney et al., 2012), however females were shown to prefer music at a lower volume (Priest et al., 2004). This, again, points to the individuality and uniqueness of the relationship between music and exercise. To unpack the subjectivity of the relationship between music and

exercise, which has not been adequately explored in previous research, is the purpose of this study.

The artist and lyrics of a song can contribute to the motivational nature of music during exercise due to listeners prescribing meaning to the music (Priest & Karageorghis, 2008). Familiarity with music is considered important for motivation (Priest & Karageorghis, 2008). This may explain why self-selected music is considered more motivational, because one can choose to listen to music that they know which increases one's motivation to exercise. This also relates back to self-determination theory, where satisfying the need for autonomy can increase intrinsic motivation (Deci & Ryan, 2008). When people feel in control, as would happen when choosing to listen to familiar music, they have the energy to exercise (Deci & Ryan, 2008). The tempo of music was found in this theme to influence one's speed on a treadmill or a stationary bike (Hallett & Lamont, 2017). The volume of music is also important, as loud music is seen as more motivational (Priest et al., 2004). The differences in preferences of music during exercise are useful to understand because the relationship between music and exercise is subjective and needs to be described by participants in the research study to be better understood.

The findings from previous research suggest that there is a relationship between music and exercise. Self-determination theory, describing intrinsic motivation as a satisfaction of three psychological needs, is employed in this research to establish if listening to music during exercise satisfies these needs. Choosing to listen to music satisfies the need for autonomy (Priest et al., 2004), positive feedback from motivational music can potentially increase competence, and music as a mediator in the relationship with physical activity could increase the relatedness and connection to the environment. This research study, based on the relationship between music and exercise, is needed to find a deeper understanding of this relationship from a qualitative perspective and to establish whether music contributes to intrinsic or extrinsic motivation. This is needed to form a more in-depth understanding of the psychological effects of music on exercise.

### **2.3. Conceptualisation**

Motivational music awakens feelings of arousal (Hallett & Lamont, 2017), improves mood (Hallett & Lamont, 2017), stimulates physical activity (Priest & Karageorghis, 2008), and reduces feelings of exertion (Hallett & Lamont, 2017). In the context of this study, motivation is a potential subjective effect of listening to music during exercise. Regulation by the self is the definition of autonomy, in the context of self-determination theory (Ryan et al., 2009).

Autonomy is about having the perception of choice (Gagné & Deci, 2005) and the maintaining of control. In this study, autonomy refers to the feeling of control that people have, which enables them to engage in exercise and choose what type of music to listen to. Competence, another component of self-determination theory, refers to an awareness of the satisfaction that motivation provides people to achieve goals and learn skills (Ryan et al., 2009). Competence is about learning skills and reacting to the feedback that other people provide (Ryan et al., 2009). In the context of this research study, competence refers to feeling of control over one's skills, and potential to be motivated by music. For example, if music instils confidence in an individual and their ability to perform an exercise, competence will be satisfied, and intrinsic motivation will potentially be increased. In self-determination theory, relatedness is a sense of connecting to an environment and other people, as well as a feeling of being included (Ryan et al., 2009). In this research study, relatedness refers to the relationship between individuals and one's connection to their exercise environment, including music and the meaning people ascribe to it. Music could potentially increase one's relationship to their exercise environment, and thus increase motivation. This is important in this study, because music could potentially mediate one's connection to exercise thereby fulfilling the need for relatedness and increasing one's intrinsic motivation to exercise.

### **3. RESEARCH DESIGN AND METHODOLOGY**

#### **3.1. Research Paradigm**

This research study employed an interpretivist paradigm because it was interested in the human experience of motivation and aims to inductively explore the factors that contribute to why people listen to music during exercise. The study also focused on how individuals perceive psychological effects of listening to music and how this affects their exercise, according to the subjective meaning that is ascribed to music. The nature of this study values people's feelings and opinions, which is why the researcher used interviews to converse with participants and understand their subjective experience with music and exercise. The ontological assumption guiding this interpretivist study is that reality is subjective as the experience of exercise, one's choice of music and the decision to listen to music is individual, influenced by one's perceptions and meaning making. One's perceptions of music are completely subjective because music is a form of art (Reimer, 1985, as cited in Priest & Karageorghis, 2008). Individuality is an important part of this research, as individual differences influence whether someone attaches meaning to listening to music (Barney et al., 2012). The epistemological assumption is that the participants generate individual narratives about their experiences that will be considered as 'knowledge'. Individual

narratives are based on the meaning and symbolism that is ascribed to music, and one's perception of the effects of music on exercise. The axiology of this study is a value for meaning and subjectivity because it is a personal, descriptive study of the participants' choices, understanding, and perceptions.

### **3.2. Conceptual Approach**

This research study was qualitative, as it sought a deeper understanding of the subjective motivations behind people choosing to listen to music during exercise and the perceptions of the effects of music on exercise. Qualitative methods are considered advantageous in developing subjective in-depth knowledge (Priest & Karageorghis, 2008) and this type of research is preferably employed in the interpretivist paradigm. The present study I used a phenomenological design because it looks at the exploration of human experience, such as listening to music while exercising. Listening to music is a subjective experience, and is perceived differently by different people, which is why qualitative research was used to explore the individual experience in-depth.

### **3.3. Research Design**

This research study was cross-sectional in design as the research is exploratory, describing the relationship between music and exercise at a single point in time. The research was exploratory and asked participants about their experience with music and exercise, which was an accumulation of past experiences. This research was exploratory because a better understanding of the role of music in mediating motivation was needed. This research study applied self-determination theory to the context of music and exercise which required a deeper understanding and exploration.

### **3.4. Population**

The population of this research study was males and females between the ages of 18-35, who listen to music while they exercise. The population may have exercised at the gym, at home, or as part of a sports team or practise such as yoga, provided they exercise more than twice a week. The music that the population listens to may have been any genre, via any listening device, and the music may have been one's own purposefully downloaded music, the exercise environment's music, radio music, or randomly generated music playlists via applications such as Spotify or YouTube. There were no limits as to the type of exercises, the location for exercising, the type of music, or the medium of music-listening in

the population for this study. However, the population must live in Kwa-Zulu Natal, South Africa and speak English.

### **3.5. Sampling**

The unit of analysis for this study was individuals' experiences of the relationship between music and exercise. The sample that was used was three people that the researcher knows within the ages of 18-35 who listen to music while they exercise, and exercise more than twice a week. This sample was chosen so that the sample matches the population parameters and inclusion criteria. A qualitative study does not need a large sample because it aims to describe a specific experience in a few examples (Sandelowski, 1995). In this sense, using a sample of three people was sufficient to gather knowledge about their specific experiences. Furthermore, the interpretivist paradigm is interested in individual experiences, and not generalising results to a larger population, so a smaller sample is ideal. The purpose, instead, was to understand unique experiences. Providing this in-depth understanding is the core of the small sample used in a qualitative study (Sandelowski, 1995).

The research study used non-probability purposive sampling, where participants were chosen based on matching specific parameters (Maree, 2020). Purposive sampling involved the researcher selecting three cases to provide the unique knowledge of their own experience to answer the research question (Devers & Frankel, 2000). This type of sampling was used because not all target population members needed to be given an equal opportunity to participate in the study. There was no need to generalise the results of this study to a larger population, because the study was concerned with an in-depth understanding of the unique experiences of people who listen to music during periods of exercise. Participants were selected by the researcher if they met the criteria of age being between 18-35 and listen to music while they exercise to ensure confirmability. Two males and one female comprised the sample.

Participants were phoned by the researcher to be recruited for the study, as the researcher had the participants' contact details. The participants were already known to the researcher. Participants were briefly addressed about the nature of the study by the researcher in terms of its purpose, title, and reason for doing research, and the participants were asked if they would be available to participate in the study. All three participants agreed to participate, and they were then asked for their email addresses so further details about the study may be sent to them in a written format. Participants were emailed their informed consent forms (see Annexure B and C), along with details about how the interview process would work so

that both parties had them in writing. The researcher informed participants that they needed to download Skype for their online interview. The participants were also informed that the interviews will need to be audio recorded, with their permission granted by signing the consent form (Annexure C). Accordingly, participants were requested to fill in the informed consent sheet to participate in the research, after which they were asked to forward it back to the researcher, and the interview date was negotiated between participant and researcher via email.

### **3.6. Data-collection Method**

Semi-structured online interviews (see Annexure D) were used for this research study, where themes of music and motivation were discussed, and participant explanation and elaboration were encouraged. These types of interviews are said to be relatively objective while still allowing an understanding of participants' unique experience (Carruthers, 1990). The understanding of participants' unique experience that semi-structured interviews provide is useful for the purpose of this study which is to contribute to the understanding about the motivations for listening to music and how music impacts people when they listen to music while they exercise. An in-depth understanding of participants' experience with the relationship between music and exercise is the core of this research, which is why semi-structured interviews were chosen as the data collection method for this study.

Semi-structured interviews value elaboration by using 'why' or 'how' questions to delve into the topics (Newcomer, Hatry, & Wholey, 2015). This allows the collection of the unique thoughts of participants through open-ended questions (Newcomer et al., 2015). Closed-ended questions can also be used as a transition to more open-ended probing (Newcomer et al., 2015). Interviews are especially useful to collect descriptive information from participants in their own words (Carruthers, 1990). This was important for this study because participants were considered knowledgeable experts about their own experience, so justification and free thought and expression was needed. This aligns with the interpretivist view of epistemology. The interpretivist paradigm holds that there is no single reality, but that reality is subjective and depends on interpretation (Rehman & Alharthi, 2016). The interpretivist assumption of subjective epistemology means that knowledge is constructed from the experiences of participants in real life (Kivunja & Kuyini, 2017). According to this view, participants create knowledge about their own experiences with the relationship between music and exercise.

The semi-structured interview method allows an in-depth collection of rich knowledge from participants in a more conversational manner. Interviews can be described as “purposeful conversation” (Bogdan & Biklen, 1982, as cited in Carruthers, 1990). Questions for a semi-structured interview are subject to change because it should be natural and conversational (Newcomer et al., 2015). However, there should be some degree of structure to the semi-structured interview. An interview schedule aids in providing a structure while allowing flexibility of the researcher (Carruthers, 1990). The general guidelines are to start with pleasantries and establishing details about the participant, followed by non-intimidating questions, with the more controversial questions near the end of the interview (Newcomer et al., 2015).

### ***3.6.1. Application of data-collection method***

The interviews were conducted online via Skype due to the Coronavirus pandemic and social distancing measures. The researcher initiated the Skype call with each participant. The interviews were audio recorded using the researcher’s cell phone, with participants’ written consent, to ensure that they could have been accurately transcribed. The researcher greeted participants and reminded them that they were being audio recorded, that the interview was confidential, that they are not required to answer anything they do not wish to answer, and that they may withdraw at any point during the interview.

The questions that were asked in the study were mostly open-ended to allow the deep exploration of the topics by participants. The topics included why participants choose to listen to music while they exercise, how they would describe the music they listen to, the perceived effects of music, the reasons for the choice of listening to one’s own music or the exercise facility’s music, how music makes them feel during exercise, and the effects of music on mood. The question items were written in an interview schedule beforehand (see Annexure D) and were discussed in a conversational manner depending on how the participant responded. This shows the semi-structured nature of these interviews. The topics related to the research questions, which wanted to explore the reasons behind listening to music and the perceived psychological effects of music. These topic questions helped to unpack the participants’ perceptions about the relationship between music and exercise. Other topics that will be discussed in the interviews include discussions about autonomy, competence, and relatedness to provide an understanding of intrinsic motivation with regards to music and exercise. These relate to self-determination theory, which holds that intrinsic motivation improves performance if one’s needs are met. The semi-structured interviews lasted approximately thirty minutes each and covered all the topics from the

interview schedule. Participants were probed to answer why they made certain decisions about music and exercise, and once the topics were discussed, participants were asked if they had any questions or any additional information they wanted to share, after which they were thanked for their time and the interview was concluded.

### **3.7. Data analysis Method**

Qualitative analysis involves looking for ways to explore the themes found in the participants' answers using well-chosen quotations (Newcomer et al., 2015). The interviews were transcribed by the researcher, and thematic analysis was used to analyse the data for this research study. Thematic analysis is useful for identification, analysis, and reporting patterns in data (Braun & Clarke, 2006). It is also incredibly useful when analysing verbal interviews (Joffe, 2012), which is another reason the researcher used it to analyse the data collected for this study. The researcher identifies patterns, selects those that are relevant, and reports them as themes in a thematic analysis (Braun & Clarke, 2006). Themes are any patterns of meaning from the data (Joffe, 2012). This process is flexible and allows rich and detailed interpretations of data (Braun & Clarke, 2006). This research study used thematic analysis because it sought out to collect rich and detailed interpretations of participant experiences with music and exercise. Thematic analysis as a form of data analysis is typically less impacted by the researcher's beliefs and ideas, which makes it more objective as a qualitative analysis tool (Joffe, 2012). This was important for this study because the participants were considered the experts and it was their experiences, not the researcher's, that were at the core of this study.

Thematic analysis is conducted by organising data into themes (Braun & Clarke, 2006; Du Plooy-Cilliers, Davis & Bezuidenhout, 2014) to show similarities and differences within data (Braun & Clarke, 2006; Du Plooy-Cilliers et al., 2014), as well as show social and psychological interpretations (Braun & Clarke, 2006). Thematic analysis allowed the researcher to explore the themes in the data, as well as the commonalities and differences between participant perceptions of the relationship between music and exercise. The social and psychological interpretations of reality for the three participants were also able to be explored through using a thematic analysis of the data.

There are guidelines for the process of a thematic analysis. The first part of thematic analysis involves the researcher familiarising themselves with the data through transcribing, re-reading, and noting down their initial thoughts of the data (Braun & Clarke, 2006). The researcher then generates initial codes systematically across the set of data and collates

the data according to these codes (Braun & Clarke, 2006). Next, the researcher searches for themes and organises the data in terms of its relevant to each theme (Braun & Clarke, 2006). It is important to then review these themes and evaluate whether the themes are appropriate compared to the initial codes and the data set to create a thematic map (Braun & Clarke, 2006). Ongoing analysis for the refinement of themes is the next stage of thematic analysis where the definition and naming of themes takes place (Braun & Clarke, 2006). Lastly, the researcher selects quotations from participants and relates the analysis back to previous literature and the research question in the report of the analysis (Braun & Clarke, 2006).

The data analysis also utilised line-by-line coding, whereby data is analysed one line of the transcriptions at a time, and common ideas that emerge from the lines of data are noted to be analysed further afterwards (Blaire, 2015). This is a useful type of coding for this research study because it ensures no themes are missed as each line of transcription is analysed one at a time. The researcher reads one line of the transcription at a time and makes notes about the themes that emerge as well as important findings that may answer the research questions. This allows responses to why people listen to music while they exercise and the perceived psychological benefits of doing so to be grouped together to form themes used to tie back to previous literature, and to answer the research questions.

### ***3.7.1. Application of data analysis method***

In undertaking a thematic analysis, the researcher must become familiar with the data set. All data for this research study came from the three semi-structured interviews that were conducted via Skype with three participants between the ages of 18-35 who listen to music during exercise and exercise more than twice a week. The researcher transcribed the audio recordings of the interviews verbatim as well as included non-verbal communication such as laughs, pauses, interruptions, and disruptions in the Skype interview calls due to lapses in the signal, to add another layer of meaning to the data. The researcher then read the transcripts while playing back the audio to ensure that the transcripts accurately recorded all verbal and non-verbal aspects. The researcher changed the names of the participants to pseudonyms and printed out the transcripts. The researcher re-read the printed transcripts to ensure an understanding and familiarity with the data, and their initial ideas about the data were noted.

After noting the initial ideas, the researcher generated codes for the data set that were used to organise and arrange the data. Coding involved reading the transcripts line-by-line to

divide the data into collections of similar ideas. For example, one of the codes used for this research was focus, so the researcher coded all the lines in the transcripts that pertain to focus. This was done until the data was saturated with codes, after which a refinement of the codes was done. While doing this, the researcher began noting common themes that arose from the coded lines. This was an example of selective coding, which is the identification of categories that pertain to this research study to be further developed into themes. The researcher then searched for themes that could be induced from the data and the codes. The established themes were used to group the data. The transcripts were re-read once again to review the themes that were induced from the initial codes, and these themes were evaluated in terms of whether they were relevant. A thematic map was created to establish commonalities and differences between the themes found in the literature review and the themes found in the research, or whether novel themes emerged. Themes were refined by another re-read of the transcripts and by further note-making by the researcher, and the final themes found in the data for this research study were established. The literature review found the following themes: exercise endurance and duration, autonomy, motivation, mood, distraction and dissociation, and characteristics of music. The data found evidence for exercise endurance and duration, autonomy, motivation, mood, distraction, and characteristics of music. Furthermore, themes of enjoyment, self-confidence, and mental state emerged from the data collected and analysed for this research study, which contribute to the understanding of the psychological effects of listening to music during exercise.

### **3.8. Trustworthiness**

There are four elements of trustworthiness, that were addressed by this research study. Credibility examines the extent to which the results reflect reality (Shenton, 2004). This research study addressed credibility by using research methods that have been used in similar projects before, building rapport with participants to ensure honesty of participants, having frequent debriefing sessions between the researcher and their supervisor, and examining previous research findings done during this research study to ensure credibility. Transferability speaks to the extent to which the results of a study can apply in other situations (Shenton, 2004). Transferability of the study was ensured by providing contextualisation and a description of the experience being studied so that comparisons to other situations may have been made. This research study provided a background and contextualisation about what is known about music's effects on exercise and described this relationship to understand the context of this research study. If the processes involved in a study are recorded so that future researchers can repeat the study and come to a similar

conclusion, the study is dependable (Shenton, 2004). This research study described the research design and implementation, the data collection methods, and an evaluation of the project. The research design for this study was qualitative, and the study conducted online semi-structured interviews via Skype to gain an in-depth understanding of participant experiences. Furthermore, the anticipated contribution, ethical considerations, and limitations of this research study were discussed as a means of evaluating this research study. Lastly, confirmability is the last aspect of trustworthiness and can be compared to objectivity (Shenton, 2004). The researcher needs to ensure the findings are the result of experiences of the participants, not their own (Shenton, 2004). This research study also used member validation and included an in-depth description of its methodology to ensure integrity of results as well as a recognition of the study's shortcomings and limitations to address confirmability.

### **3.9. Anticipated Contribution**

This research study expected to find a deeper understanding of the meanings people ascribe to listening to music and the motivations of why people listen to music while they exercise. This research anticipated finding a positive relationship between listening to music and exercise. It is also expected that different types of music would have different effects on exercisers, because of the differences in preferences for music. The study also expected to find that people listen to music because it improves their energy levels and motivation to exercise. As such, this research contributes to the gap that exists in the literature by creating knowledge about the subjective motivations behind people listening to music during exercise. More importantly, this research contributes to a clearer understanding about whether music fosters intrinsic or extrinsic motivation in a South African population of exercisers. It assists in exploring the reason for this choice and provides a foundation for understanding of the perceived psychological benefits associated with this. This research study also contributes a new application of self-determination theory by exploring music as a potential mediating factor in the relationship between motivation and exercise.

## **4. FINDINGS AND INTERPRETATION OF FINDINGS**

### **4.1. Presentation of Findings**

The findings were collected using semi-structured interviews conducted via Skype. Two males and one female were interviewed in English, and all participants resided in Durban, Kwa-Zulu Natal. The participants' ages were between eighteen and twenty-three, and

participants engaged in exercise between two and five times a week, while listening to music for a part of their routine.

#### **4.1.1. Exercise endurance and duration**

Exercise endurance and duration has been evidenced by participants to play a role in their choice to listen to music while they exercise. All three participants found that listening to music influenced their exercise endurance or duration. Participant 1 stated that music *“just gives [their] adrenaline a little bit of an extra push, keeps [them] going, gives [them] that little extra boost that [they] need”*.

#### **4.1.2. Sense of autonomy**

A sense of control or choice in music was addressed by all three participants. Participant 1 valued autonomy, stating that, *“I can pick and choose like that what I’m feeling like and what kind of mood I’m in for the day”* because *“It’s more suited and tailored to me”*. Participant 3 uses randomly generated playlists while they exercise because, *“It’s good to have like variations in the exercise”*.

#### **4.1.3. Motivation**

Motivation played a role in all three participants’ interviews and was provided as a large factor in listening to music during periods of exercise. Participant 1 used music to *“push through that little time barrier”* and continue exercising because it keeps *“your energy levels high”* because *“internally finding the motivation comes from the music”*. Participant 2’s perspective was that music *“keeps [them] moving and motivated to carry on”* during exercise and believes that, *“without music, exercise wouldn’t be as relevant”*.

#### **4.1.4. Mood and mental state**

All three participants alluded to the influence of music on one’s mood and mental state. Participants believed that mood and mental state improved when listening to music that they considered appropriate for exercising. Participant 3 noted that music made them *“happy”* and that it put them *“in a good state of mind”* and participant 2 found that listening to music would *“put [them] in a better mood than [they] already [are]”*.

#### **4.1.5. Distraction and dissociation**

Themes of distraction and dissociation emerged in the interviews, with participants commenting on how music can distract as well as allow them to focus during exercise. For example, participant 1 described using music distract themselves from the *“pain that you*

*putting your body through*". Participant 3 agreed saying that without music "*your mind really focuses on how painful your muscles are*". Participant 2 proposed that music "*cancels out any distractions around you*" so "*all you can hear is music and then what you're doing you're focused on*".

#### **4.1.6. Characteristics of music**

Participants' music preferences included uplifting music, rap music, and hip-hop music. Participant 2 alluded to the use of fast-paced music with which to synchronise one's exercise, so they "*can work along to the beat when [they are] punching a bag*". For participant 1, listening at "*a high volume*" is to ensure that the music is "*the only thing [they] can hear while [they are] doing [their] exercise*".

#### **4.1.7. Enjoyment**

A new theme that emerged from the interviews was the use of music to enjoy one's exercise routine. Music "*makes exercising way more fun and enjoyable and it becomes something that you look forward to*", according to participant 3.

#### **4.1.8. Self-confidence and competence**

Another new theme to emerge from the interviews is effects of music on perception of self-confidence and competence. Participant 1 felt strongly about this and how music "*can definitely help you get to your goals in gym a lot easier*" and "*mentally it'll maybe give you a little bit of confidence*". Participant 3 perceived music to help "*hone in on positive aspects of yourself*" and make you feel like "*you've accomplished something*".

### **4.2. Interpretation of Findings**

The research problem this study sought out to contribute towards solving was a lack of in-depth understanding of the psychological effects and motivation of music-listening during exercise, in relation to the satisfaction of competence, autonomy, and relatedness implicated in intrinsic motivation.

All three participants described an increase in energy, fitness ability, and exercise tolerance when listening to music. Participant 1 felt that music provides the "*motivation to just push a little harder, or maybe add a little bit more weight or just run that extra kilometre*" and participant 2 described how, if exercising without music, they "*wouldn't be working out as much*". This provides evidence of the perceived psychological gain of listening to music.

Autonomy was a requirement of intrinsic motivation that was addressed. Participant 1 favoured control over their music while exercising. Participant 2 experienced less control when listening to the music played at their gym but preferred instances where they can control the volume of music. Participant 3 chooses to listen to randomised playlists of upbeat music to “*control the pace*” of their exercises. This shows the subjective nature of autonomy.

The lack of in-depth description of the motivation of music-listening during exercise was contributed towards by participants describing feeling motivation to go to gym, to push themselves in their exercises, and to try harder in their exercises when they were listening to music. This alludes to motivation being the core of perceived psychological effects experienced by music-listeners.

This study found that music improved mood, focus, and energy in individuals as well as putting exercisers in a positive mental state and the perception of being in a conducive environment for exercising. This contributes to an understanding of the psychological effects of listening to music during exercise.

Furthermore, feelings of distraction and dissociation as psychological effects of music were experienced by the participants who believed music allows them to focus on what they are doing by using music to create their own internal environment during exercise. Music also allows dissociation from the effects of exercise, which can mean exercises are perceived as easier, less painful, and more enjoyable.

Participants agreed that music should be base-heavy, fast-paced, and play at a loud volume. The reasons for this included a desire to synchronise one’s movement with a fast tempo, the perceived mood effects of faster music, the experience of diversion from external distractions with loud music, and the established likeability of already familiar music.

Music was also used as a means to perceive exercise as more enjoyable by listening to one’s favourite songs as a way to condition oneself so exercise becomes an “*exciting part of your routine instead of like the boring something that you don’t want to get done*”, according to participant 3.

Self-confidence and competence can be enhanced by listening to music during exercise because the psychological effects include feeling confident, accomplished, feeling like the exercise is easier, feeling healthier, and having a more positive outlook on the exercise process. Participant 1 calls music a “*legal steroid*” because it can be used to achieve one’s exercise goals more easily.

#### **4.2.1. Findings in context**

According to self-determination theory, an activity is rewarding if the needs for competence, autonomy, and relatedness are satisfied (Ryan et al., 2009). Competence was found in this study to be satisfied by listening to music during exercise because it increases confidence, feelings of accomplishment and health, as well as makes exercise goals seem more attainable which increases feelings of competence. The effect of music on exercise intensity (Barney et al., 2012), performance (Barney et al., 2012; Sugiharto, 2009), endurance (Schwartz et al., 1990) and perception of time (Priest & Karageorghis, 2008), which were confirmed in this study, increase feelings of competence and self-confidence.

Having control over music that one listens to during exercise provides a sense of autonomy (Hallett & Lamont, 2017) which can improve mood (Barney et al., 2012; Campbell & White, 2015; Hallett & Lamont, 2017; Sugiharto, 2009) and motivation (Priest & Karageorghis, 2008). All participants in this study chose to listen to music, and chose to listen to faster, louder, and more upbeat music during exercise. Feeling in control of this, according to self-determination theory, would create the feeling of an increase in energy (Deci & Ryan, 2008). Loud music is perceived as motivational (Priest et al., 2004) and enjoyable (Sugiharto, 2009) and familiar music is perceived as important for motivation (Priest & Karageorghis, 2008). This explains the perception of improved mood, motivation, and focus associated with music-listening in this study.

The last need satisfied by listening to music is relatedness to the environment, which is fostered by passion, support, and involvement (Ryan et al., 2009). In this study, music provided participants the motivation and energy to intensify their exercise, which increases passion and involvement. Furthermore, this study found that music improved state of mind, which enhances the exercise environment. The improvement in mood fosters a positive perception of exercise (Barney et al., 2012; Campbell & White, 2015; Hallett & Lamont, 2017; Priest & Karageorghis, 2008; Sugiharto, 2009) and a more enjoyable exercise experience (Campbell & White, 2015) which shows relatedness because perceptions of the environment are being improved upon. This study also found that music played a role in creating the perception of a perceived mental environment during exercise where exercise seems easier, more enjoyable, and painless. This dissociation effect is done to avoid the discomfort (Elliott, 2007; Priest & Karageorghis, 2008) and fatigue (Priest & Karageorghis, 2008) associated with exercise. In this regard, music mediates the relationship between the environment and the effects of exercise.

## 5. CONCLUSION

### 5.1. Research Questions, Problem, Objectives Addressed

- Why do individuals listen to music during periods of exercise?

This study found that individuals listen to music during exercise for the perceived adrenaline it provides them to increase their intensity while exercising, and to control the time of their exercise sessions. Individuals choose music that is enjoyable, motivating, diverts their attention away from external distractions, and allows them to intensify their exercises through synchronisation, for example. Music fosters motivation in the exercise environment which allows barriers to energy, time, muscular pain, and continuation to be less perceived by individuals. Individuals use music to dissociate themselves from pain and distractions that occur while exercising, for which loud music is especially useful. Furthermore, mood and mental state during exercising can be improved upon by individuals listening to music. Listening to music makes individuals more likely to enjoy their exercise, and to feel more competent and accomplished.

- What are the subjective psychological effects that listening to music during exercising has on individuals?

The perceived psychological effects of listening to music during exercise as found in this study are improved endurance, increased energy and exercise ability, motivation, improved mood and mental state, focus, adrenaline, control over one's exercise due to synchronisation with music tempo, confidence, and enjoyability of exercise.

- What is the relationship between motivation and music?

Motivation was a significant finding related to music in the exercise context. Music was found in this study to foster intrinsic motivation in individuals for those that listen to music during exercising. Music motivates individuals to participate in exercise, as well as to endure and intensify one's exercise routine.

- To what extent does music mediate the satisfaction of competence, autonomy, and relatedness?

This study found that music mediates the satisfaction of all three needs implicated in intrinsic motivation. Music contributes to the need for competence by increasing feelings of self-confidence, accomplishment, health, and goal attainment during exercise. Autonomy is experienced by having the choice of listening to music, of preferred music, and of ability to

synchronise to music. Having a sense of control over one's exercise when listening to music for the perceived psychological benefits shows a mediation for the satisfaction of autonomy. Relatedness is satisfied by the perception of improved psychological state and physical ability that enhance the exercise environment, foster a positive attitude in individuals, and create better involvement in exercise. This shows that music mediates the relationship between the individual and their environment.

## **5.2. Ethical Considerations**

The ethical concerns for this research study included obtaining ethical clearance from the IIE to conduct the research, informed consent from participants to be interviewed and recorded, ensuring confidentiality and anonymity for participants, and assuring participants their right to withdraw from the study at any time.

Informed consent was comprised of two parts. The first informed consent sheet (see Annexure B) was emailed to participants to explain the nature of the research, what is expected of them, their right to withdraw from the research at any point during the study, and their assurances of anonymity and confidentiality. This informed consent sheet also included the researcher's details as well as the researcher's supervisor's details, so that participants were able to contact them if they had any questions or concerns about their participation. Participants were also allowed to request access to the research should they wish to do so. Participants were required to sign the consent form to participate in the research (see Annexure B) and a second consent form to agree to be audio recorded during the interview (see Annexure C). The information provided in the interviews, as well as the recordings and transcripts, were kept securely by the researcher in a password-protected folder to ensure confidentiality of participants. Anonymity was ensured by using pseudonyms for the participants so that no one else knows the participant's identity, and personal details about the participants were removed from public domain.

## **5.3. Limitations**

The limitations of this study include having a restricted sample of only English-speaking, South African participants who live in Kwa-Zulu Natal, only conducting online interviews due to the Coronavirus pandemic and social distancing measures, and potential bias due to purposive non-random sampling used and the researcher knowing the participants. These may be limitations because the diversity of the sample was restricted, the interviews may have been affected by poor internet connection and less non-verbal cues to add to the verbal descriptions provided, and the researcher knowing the participants may have meant that the

participants may not have answered as comprehensively as the researcher may have wanted due to familiarity, nonchalance or because the relationship between participant and researcher does not end after the research. This may mean that they may have been more hesitant to provide some information. The research study was also limited to a period of one year.

#### **5.4. Heuristic Value**

This study contributed to an understanding about the motivations of music-listening during periods of exercise. It was found that a perceived increase in adrenaline, control over the duration of exercise, enjoyability of combining music with exercise, dissociation from external distractions and pain while exercising, improvement in mood and mental state as well as greater feeling of competence and accomplishment were the most significant reasons individuals choose to listen to music. A significant contribution of this study was the qualitative understanding that music fosters intrinsic motivation to exercise. Music satisfies the needs for competence, autonomy, and relatedness, which, according to self-determination theory, determines intrinsic motivation.

Future research about the relationship between music and exercise may include individuals from other provinces in South Africa, or individuals from various language backgrounds, to explore whether the findings from this study are limited to individuals from Kwa-Zulu Natal and from an English-speaking background. Future studies are encouraged to use a larger sample size, to engage in face-to-face interviews once the Coronavirus pandemic and social distancing measures have been lifted, and to increase the period of time allocated for research.

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## ANNEXURES

## ANNEXURE A: FINAL RESEARCH REPORT SUMMARY DOCUMENT TABLE

**TITLE:** A descriptive study of the relationship between listening to music and exercise for South African individuals

| Research Purpose                                                                                                                                                                                                      | Primary Research Question                                                                                                                                                                                                                                     | Research Rationale                                                                                                                                                                                                                                 | Seminal Authors                                                                                                                              | Literature Review – Conceptual Framework                                                                                                                                                                                                                   | Paradigm                                                                                                                                                                                                                                                                                                                                        | Approach                                                                                                                                                                                                                  | Data Collection Method                                                                                                                               | Ethics                                                                                                                                                                                                                                                              | Key Findings                                                                                                                                                 | Recommendations                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| To gain an in-depth understanding of the psychological relationship between listening to music and exercise, as well as to expand on the body of literature around self-determination theory of intrinsic motivation. | Why do individuals listen to music during periods of exercise?                                                                                                                                                                                                | This research could encourage or discourage individuals from listening to music while they exercise, promote health by incorporating music for enjoyability, to explore self-determination theory, in the music, motivation, and exercise context. | (Deci & Ryan, 2008).<br><br>(Ryan, Williams, Patrick & Deci, 2009).<br><br>(Gagné & Deci, 2005).<br><br>(Schwartz, Fernhall & Plowman, 1990) | <b>Theme 1:</b> Exercise endurance and duration<br><br><b>Theme 2:</b> Motivation<br><br><b>Theme 3:</b> Sense of autonomy<br><br><b>Theme 4:</b> Mood<br><br><b>Theme 5:</b> Distraction and dissociation<br><br><b>Theme 6:</b> Characteristics of music | <b>Paradigm</b> Interpretivism<br><b>Epistemology</b> Participants generate individual narratives about experiences, which is considered as knowledge<br><b>Ontology</b> Reality is subjective because experience of exercise, choice of music, and decision to listen to music is individual<br><b>Axiology</b> Value meaning and subjectivity | Qualitative                                                                                                                                                                                                               | Semi-structured interviews                                                                                                                           | Obtaining ethical clearance - A research proposal was submitted, and clearance granted. Consent from participants – consent sheets were provided and signed. Confidentiality – information kept securely by researcher. Anonymity – real names not used in research | Music fosters intrinsic motivation.<br><br>Music creates perceived psychological effects in listeners during exercise.                                       | To include individuals from other provinces<br><br>To include non-English-speaking participants |
|                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                    |                                                                                                                                              |                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                 | <b>Population</b><br><b>Population parameters</b> 2 males, 1 female<br><br>18-35 years<br><br>Listen to music while exercise<br><br>Exercise more than twice a week<br><br>Live in Kwa-Zulu Natal<br><br>English-speaking | Via Skype<br><br>Interview schedule                                                                                                                  |                                                                                                                                                                                                                                                                     |                                                                                                                                                              |                                                                                                 |
| Research Problem                                                                                                                                                                                                      | Secondary Research Question                                                                                                                                                                                                                                   | Key Concepts                                                                                                                                                                                                                                       | Key Theories                                                                                                                                 |                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                 | Sampling                                                                                                                                                                                                                  | Data Analysis Method                                                                                                                                 | Limitations                                                                                                                                                                                                                                                         | Key Contribution                                                                                                                                             |                                                                                                 |
| At present, there are few qualitative studies that explore why people listen to music during exercise                                                                                                                 | What are the subjective psychological effects that listening to music during exercising has on individuals? What is the relationship between motivation and music? To what extent does music influence autonomy, competence, and relatedness during exercise? | Motivation<br><br>Autonomy<br><br>Competence<br><br>Relatedness                                                                                                                                                                                    | Self-determination theory                                                                                                                    |                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                 | <b>Probability/non-probability sampling</b> Non-probability<br><br><b>Sampling method</b> Purposive sampling<br><br><b>Size</b> 3 participants                                                                            | <b>Unit of analysis</b> Individuals' experiences of the relationship between music and exercise<br><br><b>Data analysis method</b> Thematic analysis | Restricted sample<br><br>English-speaking<br><br>From Kwa-Zulu Natal<br><br>Online interviews due to Coronavirus pandemic<br><br>Bias due to researcher knowing participants                                                                                        | Self-determination theory applied to the motivation, music, and exercise context.<br><br>Relationship between music and motivation explored psychologically. |                                                                                                 |

## ANNEXURE B: CONSENT FORM

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Explanatory information sheet and consent form for participants</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p>To whom it may concern,</p> <p>My name is Emma Luisa Brown and I am a student at the IIE's Varsity College Durban North. I am currently conducting research under the supervision of Suhaila Ameer about the relationship between listening to music and exercise for individuals aged 18-35. I hope that this research will enhance our understanding of the subjective motivations behind people listening to music during exercise and provide a descriptive understanding of the meaning and psychological benefits associated with music and exercise.</p> <p>I would like to invite you to participate in my study. In order to explain to you what your participation in my study will involve, I have formulated questions that I will try to fully answer so that you can make an informed decision about whether or not to participate. If you have any additional questions that you feel are not addressed or explained in this information sheet, please do not hesitate to ask me for more information. Once you have read and understood all the information contained in this sheet and are willing to participate, please complete and sign the consent form below.</p> |
| <b>What will I be doing if I participate in your study?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p>I would like to invite you to participate in this research because it would help provide an understanding about why individuals listen to music during exercise. If you decide to participate in this research, I would like to conduct a semi-structured interview with you via Skype, which will be about one hour long and will consist of open-ended questions to gain insight into your experiences with music and exercise.</p> <p>You can decide whether to participate in this research or not. If you decide to participate, you can choose to withdraw at any time or decide not to answer particular interview questions.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Are there any risks/ or discomforts involved in participating in this study?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p>Whether or not you decide to participate in this research, there will be no negative impact on you. There are no direct risks or benefits to you if you participate in this study. You might, however, indirectly find that it is helpful to talk about your experience with music-listening during exercise. If you find at any stage that you are not comfortable with the line of questioning, you may withdraw or refrain from participating.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Do I have to participate in the study?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <ul style="list-style-type: none"> <li>• Your inclusion in this study is completely voluntary;</li> <li>• If you do not wish to participate in this study, you have every right not to do so;</li> <li>• Even if you agree to participate in this study, you may withdraw at any time without having to provide an explanation for your decision.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Will my identity be protected?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p>I promise to protect your identity. I will not use your name in any research summaries to come out of this research and I will also make sure that any other details are disguised so that nobody will be able to identify you. I would like to ask your permission to record the interviews, but only my supervisor, I and possibly a professional transcriber (who will sign a confidentiality agreement) will have access to these recordings. Nobody else, including anybody at the IIE's Varsity College Durban North, will have access to your interview information. I would like to use quotes when I discuss the findings of the research, but I will not use any recognisable information in these quotes that can be linked to you.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

|                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>What will happen to the information that participants provide?</b>                                                                                                                                                                                                                                |
| Once I have finished all interviews, I will write summaries to be included in my research report, which is a requirement to complete my Bachelor of Arts in Psychology Honours degree. You may ask me to send you a summary of the research if you are interested in the final outcome of the study. |
| <b>What happens if I have more questions about the study?</b>                                                                                                                                                                                                                                        |
| Please feel free to contact me or my supervisor should you have any questions or concerns about this research, or if there is anything you need to know before you decide whether or not to participate.                                                                                             |
| You should not agree to participate unless you are completely comfortable with the procedures followed.                                                                                                                                                                                              |
| My contact details are as follows:<br>Emma Brown                                                                                                                                                                                                                                                     |
| <hr/>                                                                                                                                                                                                                                                                                                |
| The contact details of my supervisor are as follows:<br>Suhaila Ameer                                                                                                                                                                                                                                |
| <hr/>                                                                                                                                                                                                                                                                                                |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |  |  |                  |             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--|--|------------------|-------------|
| <b>Consent form for participants</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |             |  |  |                  |             |
| I, _____, agree to participate in the research conducted by Emma Luisa Brown about the relationship between listening to music and exercise for individuals aged 18-35.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |             |  |  |                  |             |
| This research has been explained to me and I understand what participation in this research will involve. I understand that:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |             |  |  |                  |             |
| <ul style="list-style-type: none"> <li>• I agree to be interviewed for this research.</li> <li>• My confidentiality will be ensured. My name and personal details will be kept private.</li> <li>• My participation in this research is voluntary and I have the right to withdraw from the research at any time. There will be no repercussions should I choose to withdraw from the research.</li> <li>• I may choose not to answer any of the questions that are asked during the research interview.</li> <li>• I may be quoted directly when the research is published, but my identity will be protected.</li> </ul> |             |  |  |                  |             |
| <hr/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |  |  |                  |             |
| <table border="1" style="width: 100%;"> <tr> <td style="height: 50px;"></td> <td style="width: 15%;"></td> </tr> <tr> <td><b>Signature</b></td> <td><b>Date</b></td> </tr> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                        |             |  |  | <b>Signature</b> | <b>Date</b> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |  |  |                  |             |
| <b>Signature</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Date</b> |  |  |                  |             |

## ANNEXURE C: CONSENT TO BE RECORDED

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Consent form for participants</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |             |
| <p>I, _____, agree to allow Emma Luisa Brown to audio record my interview as part of the research about the subjective relationship between listening to music and exercise for individuals aged 18-35</p> <p>This research has been explained to me and I understand what participation in this research will involve. I understand that:</p> <ul style="list-style-type: none"> <li>• My confidentiality will be ensured. My name and personal details will be kept private.</li> <li>• The recordings will be stored in a password-protected file on the researcher's computer.</li> <li>• Only the researcher, the researcher's supervisor and possibly a transcriber (who will sign a confidentiality agreement) will have access to these recordings.</li> </ul> |             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |             |
| <b>Signature</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Date</b> |

## ANNEXURE D: INTERVIEW SCHEDULE

|                         |                        |
|-------------------------|------------------------|
| <b>Time: 30 minutes</b> | <b>Platform: Skype</b> |
|-------------------------|------------------------|

- Introduction: Where do you exercise, how often do you exercise, what types of exercises do you do with music – why?
- Why do you listen to music?
- What music do you listen to, and describe the characteristics of music?
- How do you perceive the effects of music?
- Why do you listen to your own music or the exercise facility's music?
- How does music make you feel?
- What is the relationship between music and motivation?
- How does music affect your sense of control over your exercise experience?
- How does music influence your satisfaction of learning new skills?
- What is your response to the exercise environment when listening to music?
- How does music influence your mood during exercise?
- To what extent do you use music to forget about the exercise process?
- Closing: Do you have any questions for me? Anything you want to add or clarify?

## **ANNEXURE E: ETHICAL CLEARANCE LETTER**



**20 July 2020**

**Student name:** Emma Brown

**Student number:** 17001607

**Campus:** Varsity College Durban North

**Re: Approval of HPS1 Proposal and Ethics Clearance**

### **HONOURS/PGDIP ETHICAL CLEARANCE LETTER**

Your research proposal and the ethical implications of your proposed research topic were reviewed by your supervisor and the campus research panel, a subcommittee of The Independent Institute of Education's Research and Postgraduate Studies Committee.

Your research proposal posed no significant ethical concerns and your supporting documents and instruments are in order to proceed. We hereby provide you with permission to proceed with your research.

In the event of you deciding to change your research methodology in any way, kindly consult your supervisor to ensure all ethical considerations are adhered to and pose no risk to any participant or party involved. A revised ethical clearance letter will be issued.

We wish you all the best with your research!

#### GENERAL CONDITIONS TO BE FULFILLED IN RELATION TO RESEARCH

*Permission is granted to proceed with the above study subject to the conditions listed below being met and may be withdrawn should any of these conditions be flouted.*

**Please note:** The panel has not considered the merits, accuracy or ethical soundness of the research. The only merits examined are the use of The IIE as a sample.

Permission is granted subject to the following conditions:

1. The researcher(s) will need to obtain informed consent in writing from all of the participants in his/ her sample if the study is not anonymous.
2. The researcher(s) may only use the data collected for research purposes and in no other way.
3. Photographs of human subjects may only be taken if relevant to the research, informed consent was obtained, and even with informed consent, the photographs may not be published on any online platforms.
4. The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.
5. No names or identifying information of participants may be used within the research and the research must be voluntary.
6. Please make it clear that the information will not be used punitively in any way and participants may in no way be counselled/advised based on this.

## ANNEXURE F: ETHICS CHECKLIST



### HONOURS RESE, RESM and RMET ETHICS CHECKLIST

Student name: Emma Luisa Brown  
 Title of the research: A descriptive study of the relationship between listening to music and exercise for South African individuals

|                                                                                                                                                                                                                                                                                                 | Yes | No | Comment: Supervisor/<br>navigator/lecturer |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|--------------------------------------------|
| Are you using <b>human subjects</b> in your research?                                                                                                                                                                                                                                           | ✓   |    |                                            |
| <b>I intend to use human subjects</b> <ul style="list-style-type: none"> <li>I understand that I will not conduct research with human subjects under the age of 18 and other vulnerable groups.</li> <li>I understand I can only proceed once I receive an ethical clearance letter.</li> </ul> |     |    |                                            |
| <b>Interviews/ Focus groups</b><br>An example of the <i>written consent form</i> I intend to use is attached.                                                                                                                                                                                   | ✓   |    |                                            |
| I will <b>record</b> the interview/focus groups and the sample of the letter where I ask for permission to do so is attached.                                                                                                                                                                   | ✓   |    |                                            |
| <b>I plan to use an interview schedule:</b> The example of my research instrument is attached.                                                                                                                                                                                                  | ✓   |    |                                            |
| <b>I plan to use a questionnaire:</b> The example of my research instrument is attached.                                                                                                                                                                                                        |     | ✓  |                                            |
| <b>I plan to use a gate-keepers letter:</b> The example of my letter is attached.                                                                                                                                                                                                               |     | ✓  |                                            |
| <b>I plan to do research on an IIE site/with IIE</b><br>students/staff/artefacts and I filled in the application for permission to do so. The application is attached.<br>I understand I can only proceed once I receive IIE Approval for this.                                                 |     | ✓  |                                            |

Signed: .....  
 (student)

## ANNEXURE G: ORIGINALITY REPORT

myvc.iilearn.ac.za/webapps/mdb-sa-BB5f5880ccc4141/originalityReport/ultra?attemptId=5c79d562-213e-48f6-af18-d5fd2c4d2212&course\_id=\_80742\_1&includeDeleted=true&print=true&idow...

Apps My VC Canva Urban Dictionary: E... Mindmusik psych t... APA 7 Referencing -... APA Formatting Gui... Google Scholar Sci-Hub Other bookmark

### SafeAssign Originality Report

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Emma Brown

Submission UUID: 6d9b1e34-9756-d7ac-a2f6-0aca041c9b36

Total Score:  High risk 100 %

| Total Number of Reports | Highest Match                                   | Average Match | Submitted on                           | Average Word Count                                        |
|-------------------------|-------------------------------------------------|---------------|----------------------------------------|-----------------------------------------------------------|
| 1                       | 100 %<br><small>Assignment 7 FINAL.docx</small> | 100 %         | 21/10/20<br><small>11:08 GMT+2</small> | 13,623<br><small>Highest: Assignment 7 FINAL.docx</small> |

 Attachment 1 100 %

Word Count: 13,623  
Assignment 7 FINAL.docx

Institutional database (15)

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|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
|  My paper      |  My paper      |  My paper      |
|  My paper      |  Student paper |  Student paper |
|  My paper      |  My paper      |  My paper      |
|  Student paper |  Student paper |  Student paper |
|  Student paper |  Student paper |  Student paper |