

The impact of musically induced positive and negative emotion
on attentional bias and decision-making for positive and negative
facial expressions.

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Dissertation submitted in partial fulfilment of the requirements
for the degree of Bachelor of Science (hons) in Psychology

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CONTENTS

Title page.....	i
Declarations.....	ii
Acknowledgments.....	iii
Table of Contents.....	iv
Abstract.....	v
Chapter One: Introduction.....	1
Chapter Two: Methodology.....	13
2.1. Participants.....	13
2.2. Design.....	13
2.3. materials.....	13
2.4. Procedures.....	15
Chapter Three: Results.....	18
3.1. Table 1.....	19
Chapter Four: Discussion.....	22
Reference List.....	28
Appendices.....	45

Abstract

Previous research indicated that positive and negative emotional state attracts the attention of emotional stimuli corresponding to that emotional state. The aim of this study was to explore whether experiencing positive or negative emotions influences attention and decision-making towards stimuli conveying that emotion. It was hypothesised that participants induced into either a positive or negative emotional state will perform better, in terms of speed and accuracy, at detecting stimuli of the corresponding emotional state. A sample of 33 participants were used (5 Male, 27 Female, and 1 Non-binary). Two 2x2x2 mixed ANOVAs were conducted, and the results reject the hypothesis.

Chapter One: Introduction

It has been reported by Trampe et al. (2015) that 90% of the time, a person can experience up to one or several emotions. Therefore, it can be suggested that emotions have a strong impact on our daily lives (Deonna, 2005). Additionally, it can be argued that the effects of emotion on our daily lives can also affect our attention and how we attend to our environment and subsequent actions (Taylor et al., 2005; Zadra et al., 2011). Therefore, the relationship between emotion and attention can be intermixed, affecting how individuals perceive and react to the environment (Zhu et al., 2010). Emotions can have a profound effect on our response to situations, the importance of reacting appropriately to our environment is essential to be able to resolve conflicts effectively, maintain emotional balance, fostering healthy relationships, and promoting both mental and physical well-being. It allows us to respond thoughtfully and constructively, rather than being driven by reactive, unchecked emotions (Menefee et al., 2022).

As a definition, emotion is considered to be a deliberate mental response such as fear or happiness, which are subjectively interpreted by an individual as strong emotions that are typically focused on a specific item and are frequently followed by physiological and behavioural changes in the body (Adolphs et al., 2019). Additionally, research has been conducted attempting to classify different types of emotions. For example, Paul Ekman (as cited in Gu et al., 2019) suggested that there are six basic emotions that are thought to be universal throughout different cultures. These are sadness, anger, surprise, fear, joy and disgust; this is also known as the basic emotion theory (Cabanac, 2002; Keltner et al., 2019). Furthermore, Ekman expanded this list later on, including various other basic emotions such as shame, guilt, and embarrassment. Ekman's revised list provides a more comprehensive framework for understanding the complexity of emotions and their expression across different individual and cultural contexts (Gu et al., 2019).

Three key elements aid us in having a better understanding of what emotions are and how they can differ between individuals; these consist of subjective experiences, physiological responses, and behavioural responses (Mauss et al., 2009). Although

there are universal emotions that are not affected by culture or background, it is believed that there is a highly subjective element to experiencing emotions. Emotions such as anger or happiness may be universal. However, the experiences of those emotions may differ from person to person. Additionally, the trigger of those emotions may vary between individuals; for example, one thing that makes someone extremely angry may not be the case for another (Scollon et al., 2011). Furthermore, not all emotions are felt as an individual feeling as research by Trampe et al. (2015) has found that an individual can feel mixed emotions at the same time as a result of different situations or events that may occur throughout our lives. For example, a situation where someone can experience mixed emotions might be when a person graduates from university. An individual can feel proud and accomplished for achieving a significant milestone while also feeling nervous and anxious for entering the workforce while leaving behind the familiarity of an educational environment (Carrera et al., 2007).

Physiological responses are also experienced differently between individuals (Balodis et al., 2010). Depending on the emotion felt and the situation we are in creating a physiological response each individual may react differently, a prominent indicator of emotional arousal can be seen through changes in activity in the visceral (or autonomic) motor system. This includes a variety of changes to the body, such as sweating, decreased heart rate, and cutaneous blood flow, which can be accompanied by a multitude of emotions (Kassam et al., 2013). A theory that well defines the differences between physiological response and emotions is the appraisal theory, which states that emotions are extracted from our appraisal of an event, which causes various people to react in different ways (Moors, 2020).

Finally, behavioural responses may be one of the more well-known aspects of emotion, which is the actual expression of an emotion (Jacob-Dazarola et al., 2016; King, 2020). It is commonly acknowledged that emotions have an impact on decision-making, especially when it comes to moods and unintentional emotions (Seo et al., 2007). However, the effect of particular emotions crucial to a decision is presumably less studied. Many behavioural anomalies have explanations that leave out these emotions as significant components, but this could be a mistake. It is possible that some emotions actually drive these actions rather than just being a contributing factor

(Summers et al., 2012). For example, research conducted by Summers et al. (2012) found that emotions play a significant role in decision-making, resulting in specific behavioural responses. Such as fear and anger can affect financial choices, making individuals more likely to take risks when they feel angry and more cautious when they are fearful. This can be seen through evidence provided by Loewenstein et al. (2001) who states what emotions can influence how individuals value immediate versus delayed reward, with emotional distress often leading people to focus on short-term gains at the expense of long-term benefits. Therefore, it can be suggested that emotions have a significant impact on decision-making.

There are thought to be six main theories of emotion: evolutionary, James-Lange, Cannon-Bard, Schachter-Sing, facial-feedback, and cognitive appraisal. Different theories of emotion can focus on different aspects, and they tend to categorise into three different groups: Physiological, Neurological, and Cognitive. Physiological theories claim that bodily reactions are what cause emotions (Fehr et al., 1970). Neurological theories claim that brain activity is what causes emotional reactions (Salzman et al., 2010). Finally, according to cognitive theories, concepts and other mental processes are essential for development and formation of emotions (Reisenzein, 2020).

According to the facial feedback theory of emotion, facial expressions are able to influence emotional experiences (Soderkvist et al., 2018). There are some key concepts behind this theory, one of them being the suggestion facial expressions are not just for the physical representation of emotion, but the act of making certain facial expressions can cause or intensify the corresponding emotional state, which suggests that there is a reciprocal association between facial expressions and emotional state (Soderkvist et al., 2018). Furthermore, there is thought to be a link between facial movements and signals to the brain which can then affect the experience of an emotion. For example, if an individual smiles, they may experience feelings of happiness (Izard, 1990; Soderkvist et al., 2018).

A wide range of studies have been conducted in relation to the facial feedback theory. One well-known experiment involves the Duchenne and non-Duchenne smile. As part of the study, participants held up a pencil in their mouth in such a way that they

either induced a smile or inhibited a smile (Surakka et al., 1998). The results from the study found that participants in the induced smile group rated higher on positive experiences when viewing positive scenes from a cartoon show compared to the inhibited smile group. This supported the theory's proposed idea that facial expressions have an influence on emotional experiences (Soussignan, 2002). Additionally, research using Botulinum toxin (Botox) has found that individuals who have had Botox reported having fewer negative feelings. Botox injections change the muscles in the face, which makes it difficult to move, which can reduce the expression and intensity of negative emotions such as frowning. Research around this topic supports the facial feedback theory as it was found that the inability to create negative facial expressions or intense negative facial expressions can reduce overall feeling of negative emotion (Alam et al., 2008; Neal et al., 2011). Furthermore, there is an element of universality of facial expressions, which was outlined by Paul Ekman's research on universal facial expressions. Ekman's research provided indirect support for the notion that emotions are connected to facial expressions, which are embedded into our biology (Russell, 1995). However, there are still some concerns to the degree to which facial feedback influences emotion on individual and cross-cultural differences (Ekman et al., 1979).

Although the facial feedback theory is supported by research there are some criticisms made towards the theory. One of the major criticisms is related to the causality. The theory suggests that facial expressions have the ability to influence emotions. However, it is challenging to determine the clear relationship between the cause and effect (Buck, 1980). Emotions can cause specific facial expressions such as happiness leading to smiling, but smiling might also influence emotional experiences and lead to people feeling happier due to smiling. This reciprocal relationship makes it difficult to determine which one comes first or has a more significant impact (Schmidt et al., 2002). However, it can be suggested that other factors such as physiological changes and the cognitive appraisal of an event can be responsible for mediating the link between facial expression and the emotion felt. This can make it challenging to determine whether facial expressions are the direct cause of an emotion being felt or whether it is simply a contributing factor (Duijndam et al., 2020; QiuFang Fu et al., 2009; Schachter, 1964). Additionally, the theory has been criticised for the lack of

consideration of other factors. For example, the cognitive appraisal theory puts emphasis on the interpretation of a situation, which then shapes emotion, rather than facial expressions which the facial feedback theory suggests (Choi et al., 2018). An example of this would be that in a stressful or distressing situation, an individual may express a nervous smile however, this would not necessarily indicate that the individuals experiencing feelings of happiness, therefore demonstrating that the cognitive evaluation of a situation is necessary to shape emotion and the emotional responses (Ansfield, 2007; Ekman, 1992; Ekman et al., 1993). From this, it can be stated that emotions are more complex than facial feedback theory suggests.

The sixth main theory of emotion is the cognitive appraisal theory of emotion. The cognitive appraisal theory emphasises that in order to experience and regulate emotion, we first go through cognitive processes. According to this theory, emotions are not formed from the direct response to external events but rather the result of an individual's appraisal of a situation (So et al., 2016). This suggests that the way we appraise a situation, or an event regulates our emotional reaction to that situation or event (So et al., 2016). Magda Arnold is a key developer of the appraisal theory, who emphasized that emotions are not just reactions to events but are evaluative judgments that individuals make about their environment. According to Arnold, emotions arise from an individual's appraisal of a situation based on its significance to their needs, goals, and well-being. Arnold's contributions were unique in emphasizing the cognitive and motivational aspect of emotions, as well as emphasizing the idea that emotions are highly subjective and context-dependent (Cornelius, 2006). The cognitive appraisal theory consists of two main stages: primary and secondary appraisal (Fernandez De Henestrosa et al., 2023). Primary appraisal is the initial evaluation of an event to determine whether the event is personally relevant and, if so, whether the event is perceived as harmful, threatening, or challenging. Simply, an individual determines whether the event will have a positive or negative effect on their well-being (Lowe et al., 2003). Secondary appraisal is followed after the initial primary appraisal of an event, which involves assessing whether we have the resources or coping mechanisms that are needed to address the problem. In this stage, an individual assesses their ability to handle the perceived threat or challenge (Lowe et al., 2003). Furthermore, another core

concept behind the cognitive appraisal theory is reappraisal. Reappraisal is when an individual reassesses the situation as the situation changes or more information becomes available to them, which can then have an influence of then emotional experience as the event unfolds (Buhle et al., 2014; Lowe et al., 2003; Uusberg et al., 2019).

Appraisal theory is a psychological framework that explores how individuals evaluate and interpret events, particularly in terms of their emotional responses. Two major models of appraisal theory include structural models and process models. Both models help explain the mechanisms behind emotional responses but differ in their approach and development (Broekens et al., 2008; Marsella et al., 2009). The structural models of appraisal focus on identifying and categorising the different types of appraisals that can occur in response to events. These models tend to outline how an event is perceived, interpreted, and evaluated in terms of emotional outcomes (Broekens, 2008). Whereas, process models, emphasize the dynamic and continuous nature of appraisals. Rather than focusing solely on the categorization of different appraisals, process models aim to explain the ongoing sequence of cognitive evaluations that take place as a person responds to an event. These models view emotional reactions as the result of complex processes (Marsella et al., 2009). Both structural and process models provide valuable insights into how individuals experience and respond emotionally to events. Research often draws from both models, to capture the complexity of human emotions more comprehensively.

Additionally, in the study of emotions and appraisal theory, appraisal refers to the evaluation processes that lead to emotional responses. These evaluations typically involve assessing events or situations in terms of their relevance, significance, and impact on well-being or goals. Models of appraisal can be broadly classified into two types: continuous and categorical (Moors et al., 2013). Continuous models propose that emotional responses emerge from the continuous evaluation of certain variable. Rather than categorizing emotions into distinct types, these models suggest that emotions exist along a spectrum, where different levels of appraisal lead to different experiences of emotion (Perez-Espinosa et al., 2012). Categorical models, on the other hand, propose that there are distinct, identifiable types of emotions that emerge from

specific, well-defined patterns of appraisal. These models categorize emotions into distinct categories. For example, fear might be associated with appraisals of threat, while happiness may be associated with appraisals of fulfilment (Fujimura et al., 2011).

One of the key strengths of this theory is that it accounts for individual differences. The theory recognises that emotions are not just reactions to external stimuli but are shaped by an individual's appraisal or interpretation of stimuli. It is possible for two people to be exposed to the same event but have different appraisals, which can then lead to experiencing different emotions (Kuiper et al., 1995; Wen et al., 2018). A prime example of this would be public speaking. Two individuals may have two very different appraisals for public speaking, while one may be confident and willing to speak publicly another may be overwhelmed by social anxiety (Alden et al., 1995; Cody et al., 2011). Furthermore, this theory can be applied to the real world. A wide body of research has been conducted in numerous areas such as stress management research, health psychology, and clinical psychology (Ali et al., 2021; Olschewski et al., 2023). One way this theory has been able to help in the real world is from research in stress management; from having an understanding of how an individual appraises a stressful event, a plan of intervention can be created and modelled to each individual to alter their appraisal of a stressful event. Therefore, providing help to reduce stress or mental health outcomes (Choi et al., 2018; Junker et al., 2021; Outlaw, 1993).

Similar to other theories' criticisms being that they are overly focused on physiological responses, this theory's criticism is that it is over-reliant on cognitive appraisal being the central causal factor for emotional experiences (Storbeck et al., 2007). It has been made clear that cognition is necessary and plays a significant role in the experience of emotion, however, physiological, social, and cultural factors also have an influence (Baron, 2019; Fischer et al., 2003; Matsumoto et al., 2011). Fear is a prime example of how an individual can experience fear directly caused by stimuli such as a loud noise through a physiological response without forming a conscious appraisal (Lang et al., 2000; Steimer, 2002). Furthermore, although this theory acknowledges the role of individual differences, it can be argued that culture and social context can influence emotional appraisal, which the theory does not account for (Ji et al., 2016). Emotions cannot be deemed as purely individualistic as our surroundings

and cultural norms shape perceptions and ideas therefore having an influence on how we appraise certain events (Ji et al., 2016). For example, research conducted by Jobson et al. (2009) found that interdependent and independent cultures had different appraisals in relation to mental health which would ultimately result in various emotional responses. Furthermore, events which may be considered a threat can be appraised differently between cultures invoking different emotional responses (Gunsoy et al., 2019).

Research into emotion has led to the creation of a vast body of empirical research being conducted looking at the effects of emotion. Through research, it has been found that emotion has an effect on attention (Raymond, 2009). Compared to neutral stimuli, emotional stimuli have the ability to retain attention more quickly and for longer periods of time (Ono et al., 2016). An example of this would be research conducted by Vuilleumier (2005) who suggested that emotional stimuli such as fear or those related to threat, have the ability to capture attention faster. Additionally, emotional arousal can have an influence on attention differently depending on whether they are experiencing positive or negative emotion (Strauss et al., 2009). Both Wadlinger et al. (2010) and Fredrickson et al. (2005) conducted similar studies, and both found that when an individual experiences positive emotion it broadens their attention, and they pay more attention to positive stimuli whereas negative emotions narrow attention and the experience of negative emotion held attention to negative stimuli for longer (Veerapa, 2020). This can further be backed up by Huang et al. (2007) who also confirmed that positive and negative emotions can have an effect of the type of emotional stimuli individuals pay attention to.

The broaden-and-build theory gives deeper understanding of this phenomenon. It suggests that positive emotions, like love and gratitude, broaden cognitive and behavioral flexibility, while negative emotions narrow focus and lead to specific actions like fight or flight (Fredrickson, 2004). The theory emphasises the role of positive emotions in improving well-being, offering a more holistic view of emotional health (Fredrickson, 2001; Rahimi et al., 2014). However, it is criticised for downplaying the importance of negative emotions, which also promote survival and personal growth, such as fear increasing awareness and sadness fostering reflection (Rathunde, 2000;

Tsujimoto et al., 2024). Both positive and negative emotions influence attention, decision-making, and social interactions (Fredrickson et al., 2011; Harle et al., 2013).

There are many types of stimuli that can induce a range of emotional responses such as music, video games, faces, stressful events, and virtual reality (VR) (Gruhn et al., 2016). One of the more prominent emotional inducing stimuli is music (Ellard et al., 2012). Music has become entangled within modern-day society and can elicit deep and intense emotional responses (Juslin, 2011, as cited in Juslin et al., 2013). Typically, it has been found that positive feelings such as joy and happiness are closely associated and followed by the experience of listening to upbeat music (Schaefer, 2017). Additionally, music with a slow positive rhythm or a slow tempo can help with reducing stress or anxiety levels, demonstrating that "positive" or "positive relaxing" music helps in creating positive emotions (Adiasto et al., 2022). Research conducted by Thoma et al. (2013) found that by listening to relaxing music it can lower cortisol levels and improve people's moods. As for negative music, it has been found that distorted sounds, irregular rhythm, or sudden changes in sound have been found to induce negative emotions such as fear and anxiety (Krumhansl et al., 2008). Research by Krumhansl (1997) has found that inharmonious music, especially those that do not follow a pattern and feel very chaotic can create feelings of discomfort or cause anxiety in the listener. However, it is also important to take into consideration people's personal preferences when it comes to music genres, as music is very subjective, resulting in people having different emotional appraisals of music genres (Brattico et al., 2009). Research conducted by Olsen et al. (2023) states that although it is possible that heavy metal can encourage negative emotions, it is also possible for individuals who enjoy that genre of music to experience positive emotions. Therefore, this suggests that music is subjective and, depending on people's appraisal of the music type, it can induce positive or negative emotions.

Emotions in psychological studies can be measured through self-report, physiological, and behavioral measures (Mauss et al., 2009). Self-report involves participants directly reporting their emotional state via questionnaires or surveys (Zimmerman, 2011), using tools like Likert scales and the positive and negative affect scale (Onur et al., 2023). Strengths include ease to administer and provides direct

insight into subjective emotional experiences (Keefer, 2014; Schellings et al., 2011). However, it can be biased due to inaccurate recall or social desirability (Latkin et al., 2017; Rosenman et al., 2014).

Physiological measures track bodily responses like heart rate and skin conductance (Mackersie et al., 2016), using tools like EEG, HRV, and fMRI (Mauss et al., 2009). These measures provide real-time, objective data on emotional intensity (Lazarou et al., 2024; Yetton et al., 2019). However, its context-dependent, difficult to implement compared to other measures, and expensive (Crosson et al., 2010; Savard et al., 2024).

Behavioral measures observe expressions, body language, and voice to infer emotions (Mauss et al., 2009). Behavioral measures are culturally universal and can capture unconscious emotional responses (Jacon-Dazarola et al., 2016; Izard, 1994). However, it is subject to observer bias and are more difficult to measure accurately (Bakeman et al., 2012; Weisbuch et al., 2011).

Another aspect to consider regarding emotions is the different effect that emotions have on decision making. Depending on an individual's emotional state, it can affect how someone makes judgments or assesses a situation. An example of this would be positive emotions, which may result in someone being overly optimistic, whereas negative emotions may result in someone focusing on the potential negative outcomes (Clore et al., 2008). The affect heuristic theory suggest that people's immediate emotional responses are often used to make judgments about the risks and benefits of a situation (Slovic et al., 2007). This can be seen though Slovic et al. (2002) research which states that based on people's emotional state there more likely to determine the risks and benefits of a situation rather than creating an objective evaluation. Additionally, strong emotions can lead to impulsive decisions, which often overpower rational decision-making (Johnson et al., 2020). It has been found that, more often than not, emotions such as anger result in quick decisions, especially in situations where they feel as if they need to restore control and seek revenge (Grondal et al., 2023).

The role of positive and negative emotion is also closely linked to the detection of the corresponding emotional cue (Plate et al., 2022). It has been found that individuals tend to react quicker and more accurately to emotional cues when it corresponds with their own emotional state. Suggesting that depending on your emotional experience, it can lead to being more sensitive to emotional cues corresponding to your own emotional state, therefore making it easier to detect corresponding emotional cues (Zinchenko et al., 2017). This phenomenon can be linked to emotional intelligence (EI). It can be suggested that people who often experience positive or negative emotions may develop a higher sensitivity to emotional cues because their frequent emotional experiences create a stronger attention bias towards emotional information (Fiori et al., 2024). As previously stated, emotions have an effect of attention. According to the affective context model, individuals emotional state can shape their perception of social cues (Asutay et al., 2022). For example, people in a positive mood are more likely to interpret social information in a positive light and become more prone to detecting positive emotional cues (Wadlinger et al., 2006). Whereas people experiencing negative emotions tend to focus on more negative cues, which can lead to heightened sensitivity to negative stimuli such as negative behaviours or facial expressions. However, research around negative emotions are overly focused on depression with there being little research on the effect of negative emotions in general (Miron et al., 2024). Therefore, it can be suggested that emotions can directly influence the type of emotional cues individuals notice and how they interpret them.

In relations to detections of emotions stimuli, it is importance to take into consideration the effects of facial expressions as they are a form of constant exposure to emotional stimuli that we experience on a day-to-day basis. The role of positive and negative emotion on detecting facial expressions have also been researched. For instance, research by Coupland et al. (2004) found that positive moods can decrease the ability to identify happy facial expressions, whereas negative moods can increase the detections of negative facial expressions. Similarly, research by (Manierka et al., 2021) found that increased positive moods reduce detection of positive expressions while increasing detection of negative expressions. Whereas, increased negative moods

increase detections of both positive and negative facial expressions. However, there is still a very limited amount of research around this topic.

The present study aims to explore whether experiencing positive or negative emotions influences attention and decision-making towards stimuli conveying that emotion. And if so, is there a difference in terms of speed and accuracy depending on the emotional valence (positive vs. negative)? After examining empirical psychological literature, it has been hypothesised that participants induced into either a positive or negative emotional state will perform better, in terms of speed and accuracy, at detecting stimuli of the corresponding emotional state.

Chapter Two: Methodology

2.1 Participants

Students studying a psychology-related course at the University of Wales Trinity Saint David (UWTSD) over the age of 18 who signed up using Experimental Management System (EMS) in exchange for two course credits were used. Participants were required to have normal or corrected to normal vision to be eligible to take part in the study. A total of 33 undergraduate students were used (5 Male, 27 Female, and 1 Non-binary). The age range for this study was between 20 and 53 ($M=28.15$, $SD=8.216$).

2.2 Design

A 2x2x2 mixed quantitative experimental design was used for this study. The experiment was comprised of three sections, inducing emotion through music, affect questionnaire, and a Superlab emotion detection task. The first independent variable for this study was participant groups, this included two levels, 'positive' or 'negative' music (between-subjects). The second independent variable was music affect, participants were placed into either a positive or negative emotion group (between-subjects). Finally, the third independent variable was the detection of positive and negative faces (within-subjects). The dependent variables for this study were the response time and accuracy in detecting positive and negative faces. A three-way ANOVA was used to analyse the data to determine whether music type and positive or negative emotional states lead to better performance in terms of speed and accuracy at detecting stimuli of the corresponding emotional state.

2.3 Materials

Instrumental music was used to induce emotion. Happy pop and heavy metal music was used to induce positive and negative emotion. The music was sourced from Pixabay which is a free online music website. For positive music 'Tropical summer music' was used and for negative music 'Metal (dark matter)' was used. Both positive and negative music were 2 minutes and 33 seconds long so no editing to the music files

needed to be done. The Positive and Negative Affect Schedule (PANAS, Waston et al., 1988) was used to assess the subjective emotional experience of the music genre. For the purpose of this study the full scale was used to assess the positive and negative affect of the music genre.

The full scale consisted of 20 items, with 10 items measuring positive affect and 10 items measuring negative affect. The positive affect included items such as did the music make you feel "interested" and "excited". The negative affect included items such as did the music make you feel "upset" and "ashamed". A five-point Likert scale was used as possible responses. Responses ranged from 1-5, 1 = very slightly or not at all and 5 = Extremely. Resulting in the final total scores for each of the two sub-scaled between 10-50 and 20-100 for the overall scale. Depending on the scores it can be determined whether individuals were affected positively or negatively by the music. This was determined by whether their positive affect (PA) score or negative affect (NA) score is higher than the other to establish whether the music had a positive or negative affect on them. The reliability of the Positive and Negative Affect Schedule has a score between 0.84 to 0.87 which indicates having a very good internal reliability (Crawford et al., 2010). Cronbach's alpha for the positive affect scale and the negative affect scale demonstrated excellent reliability (Cronbach's alpha for positive was .93 and .92 for negative).

SuperLab was used for the emotion detection task. The aim of this task was to capture the speed and accuracy of detecting positive and negative emotional stimuli. The task itself was comprised of a total of 30 trials each trial involved showing participants a total of nine faces with eight of them with neutral expressions and one face showing either a positive or negative expression. There were 15 positive and 15 negative expression trials. All the images used for the task were in colour, and different gender and races were used. In total four positive and negative white female images, three positive and four negative white male images, four positive and negative black female images, and four positive and three negative black male images were used. All images showed faces from the shoulder up with all of them wearing grey t-shirts. All images were sourced from the Chicago face database these faces were chosen to

ensure diversity in the stimuli set. The responses were recorded when participants press a key (green key = positive, and red key = negative).

Image 1: Example of facial expression detection trial



2.4 Procedure

Ethical Approval

The researcher submitted both a Dissertation Proposal form and an application for Ethical Approval (Appendix A) prior to the start of data collection to ensure the safety and well-being of both the participants and researcher were thoroughly assessed. These documents were reviewed and approval was granted by the SREC (School Research Ethics Committee).

Pilot study

The study was first piloted on third year psychology and counselling students. This was done to assess which music file option for both positive and negative music had the most desired effect and to check the functionality of the study. The first pilot was done to determine the music that would be used to induce positive and negative emotions. The researcher chose two potential positive and negative instrumental music. For positive music the options were between 'Tropical summer music' (2

minutes 33 seconds) or 'Happy day' (2 minutes 50 seconds). As for negative music the options were between 'Metal (dark matter)' (2 minutes 33 seconds) or 'Melodic metal' (2 minutes 45 seconds). Five people were used to pilot this, and it was concluded that for positive music 'Tropical summer music' would be used and for negative music 'Metal (dark matter)' would be used.

Four students took part in the piloting of the actual study. Two for each condition (positive and negative induced emotion). From the feedback from the pilots a few changes were made before being able to start data collection. First, it was noted that the demographics such as age and gender were not asked as there was a change in how this was going to be administered due to ethics. Additionally, it was brought to the researcher's attention that there were some spelling mistakes within some of the instructions. The feedback taken from the pilots resulted in a few changes being made before being able to successfully.

Main procedure

Participants were guided into the lab from the waiting area once the participant EMS ID had been confirmed. The EMS ID code used was different from the study ID code which was used to group participants prior to participants entering the study. Once participants were seated, they were informed by the researcher to first start with the task on the laptop via Qualtrics. The first task on the laptop was to read through the information sheet (Appendix B) and fill in the consent form (Appendix C). Following this, participants were asked to provide demographics (age and gender). Once this had been completed, they were informed to switch over to the computer, after following the instructions on the screen (Appendix D) they were asked to listen to either positive (happy pop) or negative (heavy metal) music for 2 minutes and 33 seconds which were presented on a blank white screen with a fixation cross in the middle. Counterbalancing was used to determine whether participants listened to either positive or negative music. Counterbalancing was used to control for order effects and ensure that the results are not biased by the sequence that the conditions were presented. Following this, participants were instructed to move back to the laptop and complete the Positive and Negative Affect Schedule (PANAS, Watson et al., 1988) via Qualtrics. The question was presented with a multiple-choice layout to provide a response, no time limit was

given for participants to complete this task. Following the completion of the questionnaire participants were instructed to then move back to the computer to complete the Superlab task. Participants were first given instruction on how to complete the task and then shown an example of the positive and negative faces. Once this had been done participants were shown a series of 30 trials with a set of neutral faces with either a positive or negative face presented in the series, there were a total of 15 positive and 15 negative faces randomly intermixed into each trial, participants were asked to detect the different facial expression within each trial. Each trial showcased nine faces total, eight neutral faces, and either one positive or negative face randomly shown within the mix of neutral faces. Each trial had a time limit of three minutes and if participants failed to respond it would automatically move onto the next trial. Participants provided their response by either pressing the green (positive) or red (negative key). They were not told if they had answered correctly or not. After the completion of this task the study came to an end and participants were asked to call for the research for the debriefing. Participants were first thanked for taking part in the study and then given a verbal debrief followed by a printed debrief sheet for them to take with them (Appendix E). As part of the debriefing process participants were asked to watch a 2-minute relaxing wave video to ensure that they did not leave the study feeling negative if the music or images of negative faces had affected them negatively.

Chapter Three: Results

SuperLab data was transferred to Excel, and Qualtrics data was downloaded into a separate sheet within the same document. The original datasets were saved as “RawData SuperLab” and “Qualtrics RAWData”. Unnecessary columns, repeated data, and trial spaces were removed from both SuperLab and Qualtrics datasets. After cleaning, the SuperLab data contained music group (positive/negative), events, key presses, accuracy, and reaction time, while the Qualtrics data included participants ID, age, gender, and PANAS questionnaire responses. Accuracy and speed for positive/negative faces, as well as positive and negative affect were calculated by summing individual scores. Participants were assigned to either positive or negative affect group based on their higher individual score in either positive or negative affect.

During the data clean up it was noticed that participant P19-NEG did not answer “did the music make you feel ashamed” on the PANAS questionnaire. Therefore, a mean score was calculated from the negative affect questions and used to fill in the question. This is acceptable as a form of mean substitute as it helps to maintain the integrity of the data without losing the participant’s data entirely. Furthermore, both P10-POS and P12-POS could not be used as they did not fit into either a positive or negative affect group. This is due to participants having the same affect score for both positive and negative affect. A data normality check was conducted to test for outliers within the sample. After the test nine outliers were detected and we removed from the sample. These included P1-POS, P1-NEG, P2-NEG, P4-POS, P5-POS, P8-NEG, P11-NEG, P13-POS, and P20-NEG (Appendix F). The descriptive statistics for all variables included in the analysis are included in Table 1.

3.1 Table 1

Descriptive Statistics for Variables Included in the Study

	Music	Affect	Mean (<i>M</i>)	Standard Deviation (<i>SD</i>)
Positive Face Score	Positive	Positive	11.86	3.549
		Negative	14.00	1.414
	Negative	Positive	11.25	4.892
		Negative	11.00	.
Negative Face Score	Positive	Positive	14.79	.426
		Negative	15.00	.000
	Negative	Positive	14.56	.727
		Negative	15.00	.

From the data above it can be seen that those who listened to positive music that made them feel more negative affect performed the best at being able to detect negative faces (Mean 15.00). Additionally, those who listened to negative music that made them feel more negative affect performed the worse at being able to detect positive faces (Mean 11). In general, the scores were good as the highest score possible was 15 for each positive and negative faces. In each of the groups participants scored more than half with the lowest score being 11 and the highest being 15.

Inferential statistics:

Two 2x2x2 mixed analysis of variances (ANOVAs) were conducted on the data to explore music (positive/negative as a between-subjects factor), music affect (positive/negative affect as a between-subjects factor), and detection of positive and negative faces (within-subjects factor) on the speed and accuracy, respectively, of detecting the positive and negative faces.

Accuracy

All assumptions from the mixed ANOVA were checked and no violations were found. The three-way interaction between face, music, and affect was non-significant $F(1, 29) = .223, P = .640$. Indicating that the relationship between the detections of faces, the type of music, and the effect of the music has no significance on the accuracy of detecting emotional face stimuli. The two-way interaction between face and music F

(1,29) = .373, $P = .546$, faces and affect group $F(1,29) = .050$, $P = .824$, and music and affect group $F(1, 29) = .159$, $P = .693$ were also not significant. Indicating that there is no significance between the two-way interactions in terms of accuracy.

The main effect of music type $F(1, 29) = .495$, $P = .487$ was non-significant indicating that overall music type does not influence accuracy of detection of positive and negative faces. Affect group $F(1, 29) = .219$, $P = .644$ was non-significant indicating that overall positive and negative effect does not affect the accurate detection of positive and negative faces. The main effect of faces $F(1, 29) = 4.120$, $P = 0.05$ was not significant, however there was a trend towards significance. This indicates that there is likely to be a difference in the accuracy of detection for positive and negative faces. The mean scores demonstrate that negative faces were more accurately detected ($M = 14.70$, $SD = .585$) than positive faces ($M = 11.67$, $SD = 4.105$).

Speed

The three-way interaction between face, music, and affect was non-significant $F(1, 29) = .395$, $P = .535$. Indicating that the relationship between the detections of faces, the type of music, and the effect of the music has no significance on the speed of detecting emotional face stimuli. The two-way interaction between face and music $F(1, 29) = .458$, $P = .504$, face and affect group $F(1, 29) = .156$, $P = .696$, and music and affect group $F(1, 29) = .033$, $P = .857$ was also non-significant. Indicating that there is no significance between the two-way interactions in terms of speed.

The main effect of music type $F(1, 29) = .175$, $P = .679$ was non-significant indicating that type of music does not affect the speed of responses. The main effect of affect group was non-significant $F(1, 29) = .012$, $P = .912$. Indicating that overall positive and negative affect does not have an effect on the speed of detecting positive and negative faces. Finally, the main effect of faces $F(1, 29) = 2.966$, $P = .096$ was also non-significant. Indicating that positive and negative faces do not have an effect on the speed of detecting positive and negative faces.

The hypothesis that participants induced into either a positive or negative emotional state will perform better, in terms of speed and accuracy, at detecting stimuli

of the corresponding emotional state cannot be accepted as it was found that being in a positive or negative emotional state does not affect the speed and accuracy of detecting stimuli corresponding that emotional state. However, negative faces in general are detected more accurately than positive faces.

Chapter Four: Discussion

The aim of the study was to explore whether experiencing positive or negative emotions influence attention and decision-making towards stimuli conveying that emotion. It was hypothesised that participants induced into either a positive or negative emotional state through the listening of positive or negative valenced music would perform better, in terms of speed and accuracy, at detecting stimuli of the corresponding emotional state. Based on the results Of this study, the hypothesis was rejected. The results revealed that emotional state did not influence the speed and accuracy at detecting stimuli of the corresponding emotional state.

This contradicts previous studies on the effects of emotion on attention. For example, the findings from Vuilleumier (2005), revealed negative emotional stimuli, such as threat or fear can capture attention faster than neutral faces. However, the present study found that regardless of the type of emotional stimuli presented (positive or negative) there is no significant difference in speed of decision making to emotional stimuli was detected. The discrepancy in results may be due to differences in the methodology. Vuilleumier (2005), used brain imaging techniques to assess emotional stimuli and attention whereas the current study involved the participants pressing a key to determine whether a positive or negative stimulus was presented. Therefore, the reason why these may have been a difference is because in the current study, the additional task of having to engage in a decision-making process and subsequent behavioral key press may have negated the effects of any enhanced initial perceptual detection to negative stimuli that is seen in brain imaging research.

Furthermore, the current study contradicts the findings of Wadlinger et al. (2010) who found that positive emotions broadens the breath of attention and allows for the detection of positive emotional stimuli, while negative emotions narrow the breadth of attention with negative emotions leading to the detection of negative stimuli. Similarly, to the Vuilleumier (2005), study, there are a range of factors that could have influenced the differences in these results. One of them being again methodology. Wadlinger et al.

(2010) used eye tracking to assess emotion and attention, whereas the current study used a decision-making task.

Eye tracking is better able to capture information on where people initially look and length of fixations on emotional stimuli. Tasks that require a decision and a response to be provided, such as the current study, measure active engagement, which could be influenced not only by the emotion capturing perception but also other cognitive factors when engaging in the task. Eye tracking reflects more automatic processes, while an interactive task taps into controlled processes that could be influenced by task demands. For example, in the current study participants had to make an effort to engage with the task to detect the emotional stimuli, which could have led to differences in reaction time and accuracy compared to the eye tracking measure, which would have captured more immediate responses.

Additionally, previous research on the effects of music on inducing emotion also produced contradictory findings to the results of the current study. Research by Krumhansi (1997) states that inharmonious music that feels chaotic can induce negative emotions. However, this was not found to be the case for the current study. Instrumental heavy metal music was used to induce negative emotion. However, only three participants were placed into the negative affect group with two of the three coming from participants that were placed in the positive music group. It was also noted that during the study period, participants who left the study that were placed in the negative music group made comments such as “really liked the music, its right up my ally” and “music wasn’t that bad liked it more than I thought”. There are many reasons to why the findings came to this result, one of the potentially dominating factors is personal preference for music. This can be supported by Oslen et al. (2023) who states that although it is possible that heavy metal music can encourage negative emotions it also has the possibility that it can induce positive emotions. This seems to be the case for the current study.

On the other hand, previous studies have reported findings that align closely with the result of the current study. For example, Manierka et al. (2021) found that increased positive mood can reduce the detection of positive facial expressions while increasing the detection of negative facial expressions. Whereas, increased negative mood can

increase the detection of both positive and negative facial expressions. Similarly, in the present study a trend was found that indicated that there was possibility for significance in the accuracy in identifying negative facial expressions more than positive facial expressions. A potential reason for this might be due to processing style. Positive moods are associated with global, less detailed processing (top-down processing), which might make individuals less focused on specific details like positive facial expressions (Ochsner et al., 2009). In contrast, negative moods are linked with more logical, detail focused processing (bottom-up processing), which could lead to heightened attention to both positive and negative faces (Ochsner et al., 2009).

While the findings from the study provide some valuable insight into positive and negative emotions and the influence they have on attention and decision-making towards stimuli conveying that emotion, there are a range of limitation that must be acknowledged. These limitations offer important considerations for future research and should be taken into account when interpreting the results.

One of the limitations of this study is the relatively small sample size, which may have limited the generalisability of the findings, statistical validity, and reliability. In regard to generalisability, the study used undergraduate psychology students. Therefore, the results may not fully reflect the experiences of individuals from different backgrounds, regions, or demographics. Having a generalizable study is importance because it makes sure that the findings can be applied beyond the specific sample group or the context in which the research was conducted in, making the results more relevant to a broader population. Having a generalisable sample can also increase the external validity of the study, allowing for the results of the study to be applied to the real world and across difference groups of people. Additionally, it increases the confidence of the results, and replicability.

Furthermore, having a sufficient number of participants can help to ensure that results are statistically significant if an effect is there. This is one of the areas where the current study lacked majorly due to the insufficient number of participants in the negative affect group, which significantly weakens the reliability and generalizability of the findings. Without a sufficient sample size in this group, it becomes difficult to accurately detect meaningful patterns or effects, potentially leading to skewed or

misleading conclusion. A smaller sample size also reduces statistical potential of the study, making it harder to assess the true impact of negative affect on the variables being examined. Research indicates that when conducting a two-sided test to examine positive and negative affect, the required sample size depends on factors such as the expected effect size, power, and significance level. Typically, for a two tailed test, a sample of at least 64 participants per group is considered acceptable to detect a medium effect size (Cohen's $d=0.5$) with 80% power and 5% significance level (Adrade, 2020; Brydges, 2019; Burmeister & Aitken, 2012). The current study violates these assumptions so the results should be dealt with caution.

Furthermore, another limitation, was that the sample was dominated by female participants. This may have affected the outcome because studies by Lithari et al. (2010) and Solcova and Lacev (2017), suggests that while females are more adept at detecting both positive and negative emotional stimuli, they show a particularly strong advantage when it comes to recognizing negative emotional stimuli. While men can accurately detect positive emotions as accurately as females, there is typically a gender difference when it comes to recognizing negative emotional stimuli. More specifically to the current study research by Saylik et al. (2018) states that females recognise both positive and negative emotional faces faster than men. Therefore, hinting that there could be bias in the results of the current study.

Another limitation of the study is the music that was used to induce negative emotion as it did not have the desired effect. Instead of evoking negative emotion, the music that was chosen results in the opposite effect leading to participants having a positive affect towards the music. There are many reasons for this, one of them may be due to the choice of using instrumental music instead of lyrical music. Research conducted by Brattico et al. (2011) found that emotionally lyrical music can have a strong contribution in the experience on perceived negative emotions compared the using instrumental music. Additionally, it was also found that instrumental music to induce positive emotions is much more effective than positive music with lyrics. However, it's also important to take into consideration personal preference. Although both types of music can be highly effective at inducing emotions, ultimately aspects

such as personal preference are hard to accommodate to and can be unpredictable when wanting to induce a particular emotion using this method.

Furthermore, although the PANAS is a highly effective tool for measuring affect, providing reliable and valid assessments of both positive and negative emotional state. The PANAS-X, which is the extended version of the original, might have been a better choice. The PANAS-X includes additional subscales that measure a broader range of affective experiences which can potentially provide that bit more depth. As a result, while PANAS is a solid measure, the PANAS-X could offer more comprehensive insight (Haney et al., 2023). This measure has also been used in a wide body of research which specifically looked at measuring the effects of music on emotion (Hanigan et al., 2023).

Understanding how our emotions influence the way we detect and interpret emotional stimuli is important because it affects our decision-making, social interactions, and mental well-being. Recognizing how our emotions shape perception helps us become more self-aware and regulate our reactions effectively. For example, if a person is angry, they might misinterpret a neutral expression as hostile which may lead to an unwanted confrontation. Being aware of how emotions shape perception helps to better understand emotional biases which can help individuals recognise when their emotions are negatively affecting their perception of reality. It can also help with real world situations. For example, people in a leadership role such as a manager in a bad mood might perceive a person's natural facial expression as a negative expression, which may affect the way the manager treats that person. Emotional awareness helps leaders make fair and rational decisions. Therefore, it is important to understand how emotions influence the way we detect and interpret emotional stimuli.

In conclusion, this study explored the influence of positive and negative emotions on attention and decision-making towards stimuli conveying that emotion. The hypotheses stated that participants induced into either a positive or negative emotional state would perform better, in terms of speed and accuracy, at detecting stimuli of the corresponding emotional state. However, the results revealed no significant findings regarding the impact of emotional state on speed and accuracy in the detection of emotional stimuli of the corresponding emotional state. The only notable outcome was that there was a trend leading towards being significant which

was that there is likely a difference in accuracy of detection for positive and negative faces. Overall, while emotional states did not appear to influence decision-making or attention in this study, the trend noticed in the study can be further investigated to further understand the underlying mechanisms to this phenomenon.

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Appendix

Appendix (A)

Proposal form



ECPS6001: Psychology Empirical Project Research Proposal

Assessment Component 1: Research proposal (1,000 words) worth 10% of the overall module mark for the Psychology Empirical Project. The proposal form will be marked in line with the Level Six Grading Rubric. The boxes below will expand as you type.

Student Name and University ID number:	Afsana Begum (2204410)
Proposed Supervisor's name:	<i>Only complete this if you have already been in contact with a potential supervisor who has agreed to supervise you in principle.</i> <i>Dr Kate Williams</i>

Psychology Research Area (tick all that apply)

Social Psychology	Developmental Psychology	Biological Psychology	Forensic Psychology
Health Psychology	Individual Differences	Educational Psychology	Political Psychology
Cognitive Psychology ✓	Clinical Psychology	Counselling Psychology	Occupational Psychology
Other: indicate briefly (not included in word count)			

Proposed Study Design (tick all that apply)

Quantitative ✓	Experimental ✓	Applied (with UWTS students)	Online Questionnaire Survey
Qualitative	Quasi Experimental	Focus Groups	Online
Mixed Methods	Applied (with external organisation)	Interviews	Lab-based study ✓
<i>If Applied, and involving an external organisation, please indicate your plans for gaining appropriate approvals from the organisation: (not included in the word count)</i>		<i>Other study design: indicate briefly (not included in word count)</i>	

Suggested Research Title/Area: (between 10-15 words and must reflect the essence of your proposed research question, study design and study population and should be more specific than a broad topic area).

The impact of positive and negative emotion on attentional bias and decision-making: using Ekman's universal facial expressions.

Background: 250 words

Why is your study important? What theory and empirical research evidence supports your research question? (Please provide a rationale for your study including a brief review of relevant psychological literature and theory and a minimum of five references).

Emotion affects people differently as it is a subjective experience (Fischer et al., 2003). It can affect people's perception and how they see the world (Deonna, 2005). Arguably depending on our emotional state, it can influence our attention to the environment and subsequent actions (Zadra et al., 2011). According to Kahneman (1973), & Shinn-Cunnigham (2008) the process of paying attention involves the mind's internal machinery determining the significance of a stimulus and filtering accordingly. Therefore, it is important to investigate whether emotions can influence our attention to detecting emotional stimuli, as detecting emotional stimuli may result in further motivation to react on that emotion.

The broaden-and-build theory (Fredrickson, 2001) suggests that the experience of positive emotions widens a person's momentary thought-action repertoires and attention. Research by Fredrickson et al. (2005) tested 104 college students by eliciting different emotions through watching a film. It was found that positive emotions widened the scope of attention while negative emotions narrowed attention. Research by Niedenthal et al. (2010) found that induced state of happiness and sadness influenced early information processing stages by facilitating lexical-decision making and word-naming of happy and sad related words, respectively.

This study is aiming to further investigate around this topic area with a focus on whether positive and negative emotions have an influence on attention towards positive and negative facial stimuli. There is still a limited amount of research surrounding emotion and the detection of facial stimuli. Facial expressions are something we are constantly surrounded by, which is why this study is aiming to investigate whether positive and negative emotions have an effect in the attention and detection-making facial stimuli conveying that emotion.

Reference list:

Deonna, J. A. (2005). Emotion, perception and perspective. *Dialectica*, 60(1), 29-46.

<https://doi.org/10.1111/j.1746-8361.2005.01031.x>

Fischer A. H., Manstead, A. S. R., & Zaalberg, R. (2003). Social influences on the emotion process. *European Review of Social Psychology*, 14(1), 171-201.

<https://doi.org/10.1080/10463280340000054>

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, 56(3), 218-226.

<https://psycnet.apa.org/doi/10.1037/0003-066X.56.3.218>

Fredrickson, B. L., & Branigan, C. (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition & Emotion*, 19(3), 313-332.

<https://doi.org/10.1080/02699930441000238>

Kahneman, D. (1973). *Attention and Effort*. Prentice Hall.

Niedenthal, P. M., Halberstadt, J. B., & Setterlund, M. B. (2010). Being happy and seeing "happy": Emotional state mediates visual word recognition. *Cognition and Emotion*, 11(4), 403-432. <https://doi.org/10.1080/026999397379863>

Shinn-Cunningham, B. G. (2008). Object-based auditory and visual attention. *Trends in Cognitive Sciences*, 12(5), 182-186. <https://doi.org/10.1016/j.tics.2008.02.003>

Zadra, J. R., & Clore, G. L. (2011). Emotion and perception: the role of affective information. *WIREs Cognitive Science*, 2(6), 676-685. <https://doi.org/10.1002/wcs.147>

Please state the main research question(s) or hypotheses(s): (100 words max)

1. Does experiencing a positive or negative emotion influence attention and decision-making towards stimuli conveying that emotion?
2. If so, does this differ in terms of speed and accuracy depending on the emotional valence (positive vs. negative)?

Hypothesis:

- Participants induced into experiencing either a positive or negative emotional state will perform better, in terms of speed and accuracy, at detecting stimuli of the corresponding emotional state.

Methodological Details (500 words)

Please summarise the key methodological approach: (you can include copies of proposed study materials as appendices if you wish). You must include details of the following:

- **Participants:** Who will your participants be, how will you access and recruit them, and how many are needed?
- **Design:** Using appropriate terminology clearly define key elements of your design (IVs, DVs, Qual approach, expt. manipulations etc). How do you plan to analyse your main data?
- **Materials:** What are the main measures, scales, experimental tools or other materials required for your study?
- **Procedure:** How will you carry out the study – define briefly what will happen to a participant in your study from the point of consent to the study debrief.

Participants:

Students studying a psychology-related course at UWTSD over the age of 18 who sign up using Experimental Management System (EMS) in exchange for course credits will be used. Participants are required to have normal or corrected vision to take part in this study. The study will require ~60 participants with ~30 participants in each group (positive or negative). In relation to similar studies by Smith et al., (2003) with 34 participants total and Wadlinger et al.,

(2006) with 58 participants' total. This study will be larger by comparison to ensure the accuracy behind data collected.

Design:

A 2x2x2 mixed quantitative experimental design will be used. The experiment itself will consist of three sections, inducing emotions through music, affect questionnaire, and a Superlab emotion detection task. The first independent variable will be participant groups, with two levels, 'positive' or 'negative' music (between-subjects). The second independent variable being how the music made participants feel in terms of positive/ negative emotion (between-subjects). Finally, the third independent variable will be detecting positive and negative faces (within-subjects). The dependent variable will be response time and accuracy in detecting positive and negative faces. A three-way mixed ANOVA will be used to analyse the data to determine whether positive or negative emotional state lead to better performance in terms of speed and accuracy, at detecting stimuli of the corresponding emotional state.

Materials:

Happy pop and heavy metal instrumental music will be used to induce positive or negative emotion. The Positive and Negative Affect Schedule (PANAS, Watson et al., 1988) will be used to assess emotional experience from subjective affect of the music genre, there are 20 items total with 10 items measuring positive affect and 10 items measuring negative affect. The emotion detection task will capture speed and accuracy of responding to a series of randomised positive and negative facial expressions, based on Ekman's universal facial expressions (Ekman, 1994) which will be administered through SuperLab. During the data collection period participants will be divided into positive/ negative music groups by using counterbalancing which would be done by giving the first participant positive music and the second participant negative music and keep alternating as participants attend. The study will consist of 30 trials total with 15 negative faces and 15 positive faces in a series of natural faces presented in a random order, responses will be recorded when participants press a key (e.g. green key = positive, and red key = negative).

Procedure:

Participants will complete the study in the Psychology Labs. Following consent, participants will listen to either positive or negative music, then they will be asked to fill out the Positive and Negative Affect Schedule (PANAS, Watson et al., 1988). Following this all participants will view a series of 30 neutral faces with 15 negative and 15 positive faces randomly intermixed into the series and asked to detect the odd facial expression within the series. Once all the trials are complete, the study will be finished, and participants will be debriefed and thanked for taking part.

Key Ethical considerations (150 words)

In this section you are required to briefly outline any specific ethical considerations for your project. All projects will be expected to adhere to the BPS code of human research ethics, and you will need to submit a full ethics form which will document your specific processes for informed consent, debriefing, and data protection. Here you need to briefly note additional or specific key ethical considerations for your particular project e.g. potential for distress or discomfort, any deception, research with vulnerable

populations or sensitive topic areas, and briefly outline how you expect to manage these risks within your project.

Prior to taking part in the study, it will be made clear that viewing faces displaying negative emotions is required, allowing participants to make an informed decision whether to participate. However, if participants do experience distress from viewing negative faces positive images will be shown at the end to reduce potential negative emotions. Additionally, Participants will be deceived to some degree as they will not be aware that they will be categorised into different groups. This will be revealed during the debriefing. Additionally, some participants will be required to listen to negative music which may cause distress. It will be made clear that participants have the right to withdraw at any point. Furthermore, participants who listen to negative music will be given positive music to ensure they don't leave feeling negative if the music has affected them negatively. Furthermore, while completing PANAS participants may notice they are feeling negative, however it will be made clear that they can leave the study at any point.

Ethics form



PG2 / E1 FORM

APPLICATION FOR ETHICAL APPROVAL

RESEARCH STUDENTS

This form is to be completed by the student within **SIX** months for full-time students and **TWELVE** months for part time students, after the commencement of the research degree or following progression to Part Two of your course.

Once complete, submit this form via the [MyTSD Doctoral College Portal](https://mytsd.uwtsd.ac.uk) at (<https://mytsd.uwtsd.ac.uk>).

This document is also available in Welsh.

RESEARCH STAFF ONLY

All communications relating to this application during its processing must be in writing and emailed to pgresearch@uwtsd.ac.uk, with the title 'Ethical Approval' followed by your name.

STUDENTS ON UNDERGRADUATE OR TAUGHT MASTERS PROGRAMMES should submit this form (and receive the outcome) via systems explained to you by the supervisor/module leader.

In order for research to result in benefit and minimise risk of harm, it must be conducted ethically. A researcher may not be covered by the University's insurance if ethical approval has not been obtained prior to commencement.

The University follows the OECD Frascati manual definition of **research activity**: "creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications". As such this covers activities undertaken by members of staff, postgraduate research students, and both taught postgraduate and undergraduate students working on dissertations/projects.

The individual undertaking the research activity is known as the "principal researcher".

Ethical approval is not required for routine audits, performance reviews, quality assurance studies, testing within normal educational requirements, and literary or artistic criticism.

Please read the notes for guidance before completing ALL sections of the form.

This form must be completed and approved prior to undertaking any research activity. Please see Checklist for details of process for different categories of application.

SECTION A: About You (Principal Researcher)

1	Full Name:	Afsana Begum			
2	Tick all boxes that apply:	Member of staff:	☐	Honorary research fellow:	☐
	Undergraduate Student	☒	Taught Postgraduate Student	☐	Postgraduate Research Student
3	Institute/Academic Discipline/Centre:	Institute of Education and Humanities/ Psychology			
4	Campus:	University of Wales Trinity Saint David SA1 Campus			
5	E-mail address:	2204410@student.UWTSD.ac.uk			
6	Contact Telephone Number:	N/A			
For students:					

7	Student Number:	Afsana Begum (2204410)
8	Programme of Study:	BSc Psychology
9	Director of Studies/Supervisor:	Dr Kate Williams

SECTION B: Approval for Research Activity

1	Has the research activity received approval in principle? (please check the Guidance Notes as to the appropriate approval process for different levels of research by different categories of individual)	YES	☒	NO	☐
					Date
2	If <u>Yes</u> , please indicate source of approval (and date where known): <i>Approval in principle must be obtained from the relevant source prior to seeking ethical approval</i>	Research Degrees Committee	☐		
Institute Research Committee		☐			
Other (write in) Dr Kate Williams		☒	07/08/24		

SECTION C: Internal and External Ethical Guidance Materials

	Please list the core ethical guidance documents that have been referred to during the completion of this form (including any discipline-specific codes of research ethics, location-specific codes of research ethics, and also any specific ethical guidance relating to the proposed methodology). Please tick to confirm that your research proposal adheres to these codes and guidelines. You may add rows to this table if needed.	
1	UWTSD Research Ethics & Integrity Code of Practice	☒
2	UWTSD Research Data Management Policy	☒
3	UWTSD Data Protection and Storage Protocol	☒
4	BPS Code of Ethics and Conduct (2021)	☒
5	BPS Code of Human Research Ethics (2021)	☒
6	BPS Data Protection Regulation – Guidance for Researchers	☒
7	BPS internet mediated research	☒

SECTION D: External Collaborative Research Activity

If there are external collaborators then you should gain consent from the contact persons to share their personal data with the university. If there are no external collaborators then leave this section blank and continue to section E.

1	Institution	N/A
2	Contact person name	N/A
3	Contact person e-mail address	N/A
4	Is your research externally funded?	YES ☐ NO ☐

5	Are you in receipt of a KESS scholarship?		YES	☐	NO	☐
6	Are you specifically employed to undertake this research in either a paid or voluntary capacity?	Voluntary	YES	☐	NO	☐
7		Employed	YES	☐	NO	☐
8	Is the research being undertaken within an existing UWTSD Athrofa Professional Learning Partnership (APLP)?	If YES then the permission question below does not need to be answered.	YES	☐	NO	☐
9	Has permission to undertake the research has been provided by the partner organisation?	(If YES attach copy) If NO the application cannot continue	YES	☐	NO	☐

Where research activity is carried out in collaboration with an external organisation

10	Does this organisation have its own ethics approval system?	YES	☐	NO	☐
If Yes , please attach a copy of any final approval (or interim approval) from the organisation (this may be a copy of an email if appropriate).					

SECTION E: Details of Research Activity

1	Indicative title:	The impact of musically induced positive and negative emotion on attentional bias and decision-making for positive and negative facial expressions.			
2	Proposed start date:	Oct/ Nov 2024	Proposed end date:	20/05/25	
Introduction to the Research (maximum 300 words per section) Ensure that you write for a Non-Specialist Audience when outlining your response to the points below: <i>Purpose of Research Activity</i> <i>Proposed Research Question</i> <i>Aims of Research Activity</i> <i>Objectives of Research Activity</i> Demonstrate, briefly, how Existing Research has informed the proposed activity and explain <i>What the research activity will add to the body of knowledge</i> <i>How it addresses an area of importance.</i>					
3	Purpose of Research Activity The purpose of this research is to study the effects of emotions on identifying emotional stimuli. Emotions are complex by nature and can affect people's perception (Deonna, 2005). According to Zadra et al. (2011) our emotional states can have an impact on our attention to the environment as well as influencing our subsequent actions. A term that relates to Zadra et al's (2011) findings is: "seeing red". Evidence has suggested that when an individual becomes very angry, they "see red", which influences their actions and results in them acting very aggressively (Fetterman et al., 2012). The way people experience emotions has influenced research into the effects of emotion, and studies exploring early information processing has found that depending on a person's emotional state, it can influence on how they subsequently process information (Niedenthal et al., 2010). Therefore, the purpose of this research is to identify whether different emotions (positive and negative) have an impact on attentional bias to detecting emotion and decision-making to stimuli conveying that emotion.				

	(this box should expand as you type)
4	Research Question 1. Does experiencing a positive or negative emotion influence attention and decision-making towards stimuli conveying that emotion? 2. If so, does this differ in terms of speed and accuracy depending on the emotional valence (positive vs. negative)? (this box should expand as you type)
5	Aims of Research Activity To examine whether emotions influence attention and decision-making towards stimuli conveying that emotion. (this box should expand as you type)
6	Objectives of Research Activity It has been identified in previous literature that emotion can affect people in a wide range of areas such as their visual perception and subsequent actions. Therefore, this study will be using a SuperLab task to further examine the possibility of whether emotion can affect a person's attention and decision-making. The research also aims to establish whether the effects of emotion outlined in previous literature, result in affects in attention and decision-making through an emotion expression detection task. Ultimately, once the study is complete, if it has been established that experiencing a particular emotion leads to faster and more accurate detection of the corresponding emotional stimuli presented, then further research should be taken to establish ways of helping people who experience more negative emotions to calm themselves down instead of continuing to add onto that negative emotion by being drawn to negative stimuli within their environment. (this box should expand as you type)
	Proposed methods (maximum 600 words) Provide a <u>brief summary</u> of all the methods that may be used in the research activity, making it clear what specific techniques may be used. If methods other than those listed in this section are deemed appropriate later, additional ethical approval for those methods will be needed. You do not need to justify the methods <u>here, but</u> should instead describe how you intend to collect the data necessary for you to complete your project.
7	Students studying a Psychology related course at UWTSD, who are over the age of 18 and sign up using the Experimental Management System (EMS) will be involved. Participants are required to have normal or corrected to normal vision to take part in the study. These participants will be randomly split equally into two different groups (positive or negative music emotion groups). A 2x2x2 mixed quantitative experimental design will be used. The study will consist of three independent variables, each with two levels. The first is music type (happy/upbeat or negative/downbeat), which will be between-subjects. The second is affect experienced after listening to the music (positive or negative), which will also be between-subjects. The third IV (within-subjects) will be the type of emotional expression being displayed by an image of a face (positive or negative), that is surrounded by a set of neutral faces. The DVs will be accuracy and speed of detecting the positive and negative expression faces. All participants will complete the study in the Psychology Labs. As for the data, a three-way mixed ANOVA will be used. Before the study starts participants will be provided with an information sheet that outlines what the study entails. They will be made aware that they will be listening to music and then answering an affect questionnaire, and then completing a SuperLab task. Following consent participants will listen to either positive or negative music. Then participants will be asked to fill out the Positive and Negative Affect Schedule (PANAS, Watson et al., 1988), which is a 20-item scale with 10 items measuring positive affect and 10 items measuring negative

	effect. The instructions on this questionnaire will be adapted slightly to ask participants to rate their effect at that moment (rather than over the past week). Following this, participants will complete the SuperLab emotion detection task, which will consist of 30 trials, 15 involving faces displaying a negative emotion (e.g., anger) and 15 displaying a positive emotion (e.g., happiness). These will be mixed in with a series of faces displaying a neutral expression and presented in a random order. The faces used will be sourced from existing standardised stimuli databanks available to use for research purposes. Responses will be recorded when participants press a key (e.g., green key = positive face, and red key = negative face). After the detection task is finished all participants regardless of which genre of music they listened to, will be invited to watch a compilation video of animals to reduce any negative effects that may have been produced by the study. Once this is complete the study will come to an end and participants will be thanked for taking part and debriefed by the researcher. A debrief sheet will also be provided and will outline the true aims behind the study. Participants will be made aware that they have the right to withdraw from the study and asked if they would like to withdraw. If participants decide to withdraw all their data will be discarded. (this box should expand as you type)
	Location of research activity Identify all locations where research activity will take place.
8	SA1 Swansea IQ campus – 2nd floor Laboratories. (this box should expand as you type)
	Research activity outside of the UK If research activity will take place overseas, you are responsible for ensuring that local ethical considerations are complied with and that the relevant permissions are sought. Specify any local guidelines (e.g. from local professional associations/learned societies/universities) that exist and whether these involve any ethical stipulations beyond those usual in the UK (provide details of any licenses or permissions required). Also specify whether there are any specific ethical issues raised by the local context in which the research activity is taking place, for example, <u>particular cultural</u> and/or legal sensitivities or vulnerabilities of participants. If you live in the country where you will do the <u>research</u> then please state this.
9	N/A (this box should expand as you type)

10	Use of documentation not in the public domain: Are any documents NOT publicly available?	NO	☒
		YES	☐
11	If <u>Yes</u>, please provide details here of how you will gain access to specific documentation that is not in the public domain and that this is in accordance with the current data protection law of the country in question and that of England and Wales. (this box should expand as you type)		

	Does your research relate to one or more of the seven aims of the Well-being of Future Generations (Wales) Act 2015?	YES	NO
12	A prosperous Wales	☒	☐
13	A resilient Wales	☐	☒
14	A healthier Wales	☐	☒
15	A more equal Wales	☐	☒

16	A Wales of cohesive communities	☐	☒
17	A Wales of vibrant culture and thriving Welsh language	☐	☒
18	A globally responsible Wales	☒	☐
19	If YES to any of the above, please give details:		
	This study aims to explore the impact of positive and negative emotion on attentional bias and decision-making. Therefore, if it is revealed through the results that emotions do impact attention and decision-making it provides empirical data essential for a deeper understanding of the extent to which emotions can play in our day-to-day activity, which is pivotal step towards creating a more prosperous Wales. Using this data, it can be used to further investigate the effects of emotions and whether external emotional stimuli lead to the increase of that emotion. This can lead to a more globally responsible Wales, as data can lead to actions being put in place to help deal with more negative emotions which in turn improves the well-being, economic, and social environment of Wales. (this box should expand as you type)		

SECTION F: Scope of Research Activity

	Will the research activity include:	YES	NO
1	Use of a questionnaire or similar research instrument?	☒	☐
2	Use of interviews?	☐	☒
3	Use of focus groups?	☐	☒
4	Use of participant diaries?	☐	☒
5	Use of video or audio recording?	☐	☒
6	Use of computer-generated log files?	☒	☐
7	Participant observation with their knowledge?	☐	☒
8	Participant observation without their knowledge?	☐	☒
9	Access to personal or confidential information without the participants' specific consent?	☐	☒
10	Administration of any questions, test stimuli, presentation that may be experienced as physically, mentally or emotionally harmful / offensive?	☒	☐
11	Performance of any acts which may cause embarrassment or affect self-esteem?	☐	☒
12	Investigation of participants involved in illegal activities?	☐	☒
13	Use of procedures that involve deception?	☒	☐
14	Administration of any substance, agent or placebo?	☐	☒
15	Working with live vertebrate animals?	☐	☒
16	Procedures that may have a negative impact on the environment?	☐	☒
17	Other primary data collection methods. Please indicate the type of data collection method(s) below.		
	Details of any other primary data collection method: SuperLab study will be showing images of emotional faces and participants will be required to detect which emotion is being displayed by pressing the corresponding keys, which will collect speed and accuracy data.	☒	☐

	(this box should expand as you type)		
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If NO to every question, then the research activity is (ethically) low risk and may be exempt from some of the following sections (please refer to Guidance Notes).

If YES to any question, then no research activity should be undertaken until full ethical approval has been obtained.

SECTION G: Intended Participants

If there are no participants then do not complete this section, but go directly to section H.

Who are the intended participants:		YES	NO
1	Students or staff at the University?	☒	☐
2	Adults (over the age of 18 and competent to give consent)?	☒	☐
3	Vulnerable adults?	☐	☒
4	Children and Young People under the age of 18? (Consent from Parent, Carer or Guardian will be required)	☐	☒
5	Prisoners?	☐	☒
6	Young offenders?	☐	☒
7	Those who could be considered to have a particularly dependent relationship with the investigator or a gatekeeper?	☐	☒
8	People engaged in illegal activities?	☐	☒
9	Others. Please indicate the participants below, and specifically any group who may be unable to give consent.		
	Details of any other participant groups: (this box should expand as you type)	☐	☒

Participant numbers and source Provide an estimate of the expected number of participants. How will you identify participants and how will they be recruited?		
10	How many participants are expected?	Based on the study design, 75 participants will be required for this study with there being 15 participants in each music group (positive and negative) and ensuring approximately 15 participants in each affect group (positive and negative), and 15 to account for the within factor of facial expressions displayed. (this box should expand as you type)
11	Who will the participants be?	Students over the age of 18 who are currently studying at UWTSD within the Psychology and Counselling Discipline. (this box should expand as you type)
12	How will you identify the participants?	Participants will be students recruited voluntarily via the EMS and so identified by their EMS ID when attending the study. Their data will then be labelled with a different unique study ID. (this box should expand as you type)

	Information for participants:	YES	NO	N/A
13	Will you describe the main research procedures to participants in advance, so that they are informed about what to expect?	☒	☐	☐
14	Will you tell participants that their participation is voluntary?	☒	☐	☐
15	Will you obtain written consent for participation?	☐	☒	☐
16	Will you explain to participants that refusal to participate in the research will not affect their treatment or education (if relevant)?	☐	☐	☒
17	If the research is observational, will you ask participants for their consent to being observed?	☐	☐	☒
18	Will you tell participants that they may withdraw from the research at any time and for any reason?	☒	☐	☐
19	With questionnaires, will you give participants the option of omitting questions they do not want to answer?	☒	☐	☐
20	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	☒	☐	☐
21	Will you debrief participants at the end of their participation, in a way appropriate to the type of research undertaken?	☒	☐	☐
22	If NO to any of above questions, please give an explanation			
Participant will be required to complete an online consent form via Qualtrics by ticking their consent. <i>(this box should expand as you type)</i>				

	Information for participants:	YES	NO	N/A
24	Will participants be paid?	☐	☒	☐
25	Is specialist electrical or other equipment to be used with participants?	☐	☒	☐
26	Are there any financial or other interests to the investigator or University arising from this study?	☐	☒	☐
27	Will the research activity involve deliberately misleading participants in any way, or the partial or full concealment of the specific study aims?	☒	☐	☐
28	If YES to any question, please provide full details			
Participants will be concealed from the full aims of the study to begin. This will be concealing that there are two different music groups and the fact that they are being placed into different music affect groups. They will also be concealed from the fact that the music and subsequent emotion they experience could affect their detection speed and accuracy in the emotional expression detection task. However, all of this will be made clear during debrief and confirmation will be sought that they are still happy to have their data included before they leave the lab. <i>(this box should expand as you type)</i>				

SECTION H: Anticipated Risks

Outline any anticipated risks that may adversely affect any of the participants, the researchers and/or the University, and the steps that will be taken to address them. If you have completed a full risk assessment (for example as required by a laboratory, or external research collaborator) you may append that to this form.						
1	Full risk assessment completed and appended?	<table border="1"> <tr> <td>Yes</td> <td>☐</td> </tr> <tr> <td>No</td> <td>☒</td> </tr> </table>	Yes	☐	No	☒
Yes	☐					
No	☒					
2	Risks to participants For example: sector-specific health & safety, emotional distress, financial disclosure, physical harm, transfer of personal data, sensitive organisational information					
	Risk to participants: 1. Half of the participants will be required to listen to negative music which may cause distress. 2. Participants will be deceived to some degree as they will not know that they will be randomly categorised into different groups. 3. As part of the study, it is required for participants to view negative faces, which may cause distress or make participants feel uncomfortable. 4. While filling out the PANAS to determine the effects of the music, participants may notice that the music has affected them deeply, which may cause participants to feel uncomfortable or distressed. <i>(this box should expand as you type)</i>	How you will mitigate the risk to participants: 1. In line with UWTSD and BPS research guidelines, participants will be informed that they have the right to withdraw from the study at any point without penalty during the study if they do not feel comfortable enough to move forward with the study and that all their data collected before that point will be discarded. Additionally, at the end of the study a positive video will be shown to ensure they don't leave the study feeling negative if the music has affected them negatively. 2. During the debriefing it will be made known that participants were categorised into either positive or negative emotion music groups. After this information is revealed and participants wish to withdraw from the study it will be made clear that all data gathered before that point will be discarded. 3. Within the information sheet which will be provided before the study takes way it will be known to all participants that they will be required to view faces that display positive, negative, and neutral faces. They will also know that they have the right to withdraw from the study at any point and any information or data collected before that point will be discarded. Additionally, at the end of the study all participants will view a positive video, so they don't leave the study feeling negatively if the images had affected them negatively. If participants become distressed the study will be immediately terminated, support from a lab manager will be obtained. The participant will be shown the positive video. Furthermore, the incident will be reported to the supervisor and the researcher will provide further links to support the participant such as student support services.				

		4. Within the information sheet it will be made clear to participants that this study is completely voluntary and that they have the option of not answering any questions they do not feel comfortable answering. Furthermore, it will be made clear that they have the right to withdraw from the study at any point and data collected before that point will be discarded. <i>(this box should expand as you type)</i>
3	If research activity may include sensitive, embarrassing or upsetting topics (e.g. sexual activity, drug use) or issues likely to disclose information requiring further action (e.g. criminal activity), give details of the procedures to deal with these issues, including any support/advice (e.g. helpline numbers) to be offered to participants. Note that where applicable, consent procedures should make it clear that if something potentially or <u>actually illegal</u> is discovered in the course of a project, it may need to be disclosed to the proper authorities	
	N/A <i>(this box should expand as you type)</i>	
4	Risks to the investigator For example: personal health & safety, physical harm, emotional distress, risk of accusation of harm/impropriety, conflict of interest	
	Risk to the investigator: 1. The researcher's email will be provided in the debrief for the participants. Therefore, there is a potential risk that the researcher may receive negative or unwelcomed emails from a participant. 2. The research student may be asked questions that are beyond their knowledge or understanding as a <u>graduate</u> undergraduate student. 3. There is the potential risk of participants accusing a student researcher of harm/impropriety if they are not happy with study. 4. The research's physical safety in the labs may also be at risk if the participant is dissatisfied with the type of music or images that are presented in the study. <i>(this box should expand as you type)</i>	How you will mitigate the risk to the investigator: 1. The researcher's university email will be provided, and not their personal email. Therefore, if any unwelcomed emails are received from participants, it will be reported to the research supervisor. 2. Any questions that the researcher is unable to answer will be passed over to the research supervisor. 3. It will be ensured that the student researcher follows all the UWTSD and BPS codes of conduct and research guidelines. Additionally, the study will not go forward until all requirements have been met and approved by the supervisor. 4. If a participant starts to get agitated and progresses to the point where the researcher's safety is being threatened, then the study will come to an end, the researcher will remove themselves and report to the lab manager and supervisor. Also, research activity will only take place during university open hours from Monday-Friday 9am-5pm. <i>(this box should expand as you type)</i>
5	University/institutional risks For example: adverse publicity, financial loss, data protection	
	Risk to the University: 1. If the code of ethics and research protocols are broken and not adhered to then the reputation and integrity of	How you will mitigate the risk to the University: 1. To reduce any potential damage to the institution, the university's ethics and integrity code of practice, as well as the

	UWTSD and the discipline of Psychology could be damaged. 2. Data could be exposed, leaked, or misused. <i>(this box should expand as you type)</i>	BPS rules of ethics and conduct will be followed throughout all the proposed study. 2. The data collected will be stored in accordance with UWTSD Research Data Management (RDM) rules and only used for its intended purpose, in accordance with the UWTSD Research Ethics & integrity code of practice policy and the British Psychology Society (BPS) code of ethics. To reduce any risk to UWTSD and the psychology department, all data collected will be stored securely on the Psychology laboratory computers. The transfer of electrical data will only be done on anonymised data. <i>(this box should expand as you type)</i>
6	Environmental risks For example: accidental spillage of pollutants, damage to local ecosystems	
	Risk to the environment: 1. The avoid high usages of paper and ink, information sheet and consent form will not be printed. 2. Damaged to the university lab property or harm to participants. <i>(this box should expand as you type)</i>	How you will mitigate the risk to environment: 1. Information sheet and consent form will be displayed via Qualtrics. Participants will then complete an online consent form via Qualtrics by ticking their consent. 2. All lab protocols will be followed, participants will be asked to keep personal items always from the computer. Any faulty equipment will not be used and will be reported immediately to the lab manager. <i>(this box should expand as you type)</i>

Disclosure and Barring Service				
	If the research activity involves children or vulnerable adults, a Disclosure and Barring Service (DBS) certificate must be obtained before any contact with such participants.	YES	NO	N/A
7	Does your research require you to hold a current DBS Certificate?	☐	☐	☒
8	If YES, please give the certificate number. If the certificate number is not <u>available</u> please write "Pending"; in this case any ethical approval will be subject to providing the appropriate certificate number.			

SECTION I: Feedback, Consent and Confidentiality

1	Feedback What de-briefing and feedback will be provided to participants, how will this be done and when?
	The de-briefing will take place at the end of the study. All participants will be given a verbal de-briefing as well as a debrief form. The debrief form will contain additional information regarding the purpose of the study, addressing any concerns, as well as the researcher and supervisor contact details to reach out to if there are questions or concerns that have been raised <u>as a result of</u> taking part in the study. Furthermore, the researcher will explain the aim of the study once again, before

	giving the participant the opportunity to ask any questions or voice any concerns. Following this, participants will be reminded again of their right to withdraw and whether they consent for their data to be used. Participants will be reminded that if they wish to withdraw their data they must do so before leaving the lab as after this point data will be anonymous and not possible to trace back to them. <i>(this box should expand as you type)</i>
2	Informed consent Describe the arrangements to inform potential participants, before providing consent, of what is involved in participating. Describe the arrangements for participants to provide full consent before data collection begins. If gaining consent in this way is inappropriate, explain how consent will be obtained and recorded in accordance with prevailing data protection legislation.
	A online consent form will be shown to participants on Qualtrics prior to commencing the study. The consent form will clearly inform participants that they have the right to withdraw from the study at any point during the study without penalty, the assurance of anonymity, the confidentiality of their responses, and they will be fully aware that they are not obligated to answer any questions. This informed consent process is designed to ensure that participants engage in the study voluntarily and with the understanding of its procedures and ethical safeguards. The consent form will need to be ticked before the study can begin. <i>(this box should expand as you type)</i>
3	Confidentiality / Anonymity Set out how anonymity of participants and confidentiality will be ensured in any outputs. If anonymity is not being offered, explain why this is the case.
	All participant data will remain anonymous throughout the study. Participants will sign up using a unique EMS ID. Their data will then be given a different unique ID for anonymity purposes. The gender and age of participants will be recorded for descriptive statistics. The data will be anonymous. All the participants responses will be kept strictly confidential, which means that proper safeguarding will be put in place to protect the privacy of participants and their information from unauthorised access, use, disclosure, modification, loss, and theft. Physical safeguards will be implemented, making sure to lock cabinets, private lab rooms, and information stored away from the public. Any electronic data will be protected with a password on lab computers and the researcher's University OneDrive account, and based on the sensitivity of the information, data will also be encrypted. <i>(this box should expand as you type)</i>

SECTION J: Data Protection and Storage

	Does the research activity involve personal data (as defined by the General Data Protection Regulation 2016 "GDPR" and the Data Protection Act 2018 "DPA")?	YES	NO
1	"Personal data" means any information relating to an identified or identifiable natural person ("data subject"). An identifiable natural person is one who can be identified, directly or indirectly, <u>in particular by</u> reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person. Any video or audio recordings of participants <u>is considered to be</u> personal data.	x	☐
	If YES, provide a description of the data and explain why this data needs to be collected:		
2	Participants will be asked to report their age and gender as part of the description statistics. Additionally, students will use their Experiment Management System (EMS) number to sign up for the study, which will then be used to identify them when they take part in the study. However, there EMS identifying number will not be used when collecting the data produced from the study.		

(this box should expand as you type)			
Does it involve special category data (as defined by the GDPR)?		YES	NO
3	"Special category data" means sensitive personal data consisting of information as to the data subjects' – (a) racial or ethnic origin, (b) political opinions, (c) religious beliefs or other beliefs of a similar nature, (d) membership of a trade union (within the meaning of the Trade Union and Labour Relations (Consolidation) Act 1992), (e) physical or mental health or condition, (f) sexual life, (g) genetics, (h) biometric data (as used for ID purposes),	☐	☒
If YES, provide a description of the special category data and explain why this data needs to be collected:			
4	N/A		
(this box should expand as you type)			

Will data from the research activity (collected data, drafts of the thesis, or materials for publication) be stored in any of the following ways?		YES	NO
5	Manual files (i.e. in paper form)?	☐	☒
6	University computers?	☒	☐
7	Private company computers?	☐	☒
8	Home or other personal computers?	☐	☒
9	Laptop computers/ CDs/ Portable disk-drives/ memory sticks?	☒	☐
10	"Cloud" storage or websites?	☒	☐
11	Other – specify:	☐	☒
12	For all stored data, explain the measures in place to ensure the security of the data collected, data confidentiality, including details of backup procedures, password protection, encryption, anonymisation and pseudonymisation: University computers – Study data will be collected using university computer in the labs and will be password protected and located within the secure key card access lab environment. Electronic data collected from the study will be backed up into the Researcher's university OneDrive, which is password protected. Memory stick – Data will also be backed up and stored on an encrypted memory stick to ensure no data becomes lost or damaged. The memory stick will be kept within the psychology labs. Cloud storage – Cloud storage will be in the form of the Qualtrics platform (to capture PANAS responses) and University OneDrive account, both of which are password protected. (this box should expand as you type)		

Data Protection			
Will the research activity involve any of the following activities:		YES	NO
13	Electronic transfer of data in any form?	☒	☐

14	Sharing of data with others at the University outside of the immediate research team?	☐	☒
15	Sharing of data with other organisations?	☐	☒
16	Export of data outside the UK or importing of data from outside the UK?	☐	☒
17	Use of personal addresses, postcodes, faxes, emails or telephone numbers?	☐	☒
18	Publication of data that might allow identification of individuals?	☐	☒
19	Use of data management system?	☒	☐
20	Data archiving?	☐	☒
21	If YES to any question, please provide full details, explaining how this will be conducted in accordance with the GDPR and Data Protection Act (2018) (and any international equivalents, where appropriate): Data will be collected through SuperLab and Qualtrics using the University computers within the psychology labs. The data will be anonymous and then downloaded onto the researchers University OneDrive account with a password protection. <i>(this box should expand as you type)</i>		
22	List all who will have access to the data generated by the research activity:		
	Afsana Begum Dr Kate Williams External examiners (if requested) <i>(this box should expand as you type)</i>		
23	List who will have control of, and act as custodian(s) for, data generated by the research activity:		
	Researcher - Afsana Begum <i>(this box should expand as you type)</i>		
24	Give details of data storage arrangements, including security measures in place to protect the data, where data will be stored, how long for, and in what form. Will data be archived – if so how and if not <u>why not</u> .		
	Data collected through SuperLab will be stored on the university lab computers within the researcher's password protected account, and data collected through Qualtrics will be stored within the researcher's password protected Qualtrics account. All data will be used and stored in accordance with the UWTSD Research Data Management Policy. Data will be stored until the assessment from the psychology empirical project have been confirmed by external examiner, after which data will be deleted. <i>(this box should expand as you type)</i>		
25	Please indicate if your data will be stored in the UWTSD Research Data Repository (see https://researchdata.uwttd.ac.uk/). If <u>so</u> please explain. <i>(Most relevant to academic staff)</i>		
	No <i>(this box should expand as you type)</i>		
26	Confirm that you have read the UWTSD guidance on data management (see https://www.uwttd.ac.uk/library/research-data-management/)	YES	☒
27	Confirm that you are aware that you need to keep all data until after your research has completed or the end of your funding	YES	☒

SECTION K: Declaration

The information which I have provided is correct and complete to the best of my knowledge. I have attempted to identify any risks and issues related to the research activity and acknowledge my obligations and the rights of the participants. In submitting this application I hereby confirm that I undertake to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice which is published on the website: https://www.uwtsd.ac.uk/research/research-ethics/		
1	Signature of applicant:	Afsana Begum Date: 10/09/24

For STUDENT Submissions:

2	Director of Studies/Supervisor:	Dr Kate Williams	Date: 01.10.2024
3	Signature:		

For STAFF Submissions:

4	Academic Director/ Assistant Dean:		Date:
5	Signature:		

Checklist: Please complete the checklist below to ensure that you have completed the form according to the guidelines and attached any required documentation:

☒	I have read the guidance notes supplied before completing the form.
☒	I have completed ALL RELEVANT sections of the form in full.
☒	I confirm that the research activity has received approval in principle
☐	I have attached a copy of final/interim approval from external organisation (where appropriate)
☐	I have attached a full risk assessment (where <u>appropriate</u>). ONLY TICK IF YOU HAVE ATTACHED A FULL RISK ASSESSMENT
☒	I understand that it is my responsibility to ensure that the <u>above named</u> research activity will meet the University's Research Ethics and Integrity Code of Practice.
☒	I understand that before commencing data collection all documents aimed at respondents (including information sheets, consent forms, questionnaires, interview schedules etc.) must be confirmed by the DoS/Supervisor, module tutor or Academic Director.

RESEARCH STUDENTS ONLY

Once complete, submit this form via the **MyTSD Doctoral College Portal** at (<https://mytsd.uwtsd.ac.uk>).

RESEARCH STAFF ONLY

All communications relating to this application during its processing must be in writing and emailed to pgresearch@uwtsd.ac.uk, with the title 'Ethical Approval' followed by your name.

STUDENTS ON UNDERGRADUATE OR TAUGHT MASTERS PROGRAMMES should submit this form (and receive the outcome) via systems explained to you by the supervisor/module leader.

Appendix (B)

Information sheet



PG2 / E1 FORM



Centre for Psychology and Counselling
SA1 Campus
Swansea

Participant Information Sheet

Title of Study: Music and emotion expression

Research Team: Student Researcher: Afsana Begum (2204410@student.uwtsd.ac.uk) and Supervisor: Dr Kate Williams (kate.williams@uwtsd.ac.uk)

Date:

Invitation Paragraph:

You are being invited to take part in a research project being conducted by a third-year student within the Psychology and Counselling department at The University of Wales Trinity Saint David (UWTSd) for their Psychology Empirical Project. Before you decide to take part, it is important for you to understand why the research is being conducted and what participation will involve.

Please take time to read the following information carefully and discuss it with the researcher if you wish. Ask if there is anything that is not clear or if you would like more information. Take time to decide whether you wish to take part. Thank you for reading this.

Purpose of Research:

The purpose of this study is to explore the impact of music genre on emotional experience and the effects on emotional expression detection.

What does taking part involve:

This study will involve an in-person experimental lab-based task. During this study you will be required to do the following:

- Provide demographic information of age and gender.
- Listen to a piece of music for 2 minutes 33 seconds.
- Complete an Affect questionnaire.
- Take part in a computer-based task, which will involve detecting a face displaying either a positive or negative expression. There will be a set of 30 trials, and the target faces will be intermixed within in a series of faces displaying a neutral expression.

At the end of the study, you will be debriefed by the researcher, and you will be provided with the study debrief sheet.

How long will the study take:

The study is expected to take around 20 minutes to complete, so you will receive 2 EMS credits.

Benefits of participating:

Whilst there are no immediate benefits for those participating in the study, it is hoped this work will contribute to the existing body of knowledge on the effects of emotion on attention.

Risks of participating:

A potential risk may be caused from viewing images of faces displaying negative expressions, listening to music that you may not enjoy, and completing an affect questionnaire. If you feel you would be uncomfortable engaging with this type of stimuli, you are advised not to take part in this study. Also, if you did not feel comfortable completing certain questions on the affect questionnaire, you can leave these blank.

Participation and withdrawal:

Participation in this study is completely voluntary and you have the option of not answering any questions you do not feel comfortable answering. You can withdraw at any point during the study without penalty. If you wish to withdraw during the study, please inform the researcher. You do not need to give a reason for withdrawing. However, please note, once you leave the lab environment, it will not be possible to withdraw your data, as it will be anonymous.

How will your data be used and processed:

Your data will only be used for the purpose of the research activity. This study will also collect demographic data of age and gender. This is for the purpose of descriptive statistics, which form the standard reporting measures in psychology. Once the data is collected, it will be aggregated for presentation purposes by calculating the mean age and total gender numbers. This data will also not be linked to your name. The researcher will not disclose data information or use it for any other purposes.

How will your data be collected and stored:

All collected raw data will be kept in a raw format and then aggregated for analysis purposes. Computer data will be collected via SuperLab, and this data will be stored on the SuperLab computer within the Psychology labs. It will only be accessed by the researcher through a password protected university account. All SuperLab data will be anonymous and copied from the lab computer to the researcher's university OneDrive account, which will also be protected with password. If there would be a need to transfer data by a memory stick, the memory stick will be encrypted, and the data will be deleted once transfer is completed. This data will be subsequently deleted after the module assessment undergoes evaluation by the end of year examination board.

How can you contact the researchers if you have any questions:

You can contact the research student via email: Afsana Begum – 2204410@student.uwtsd.ac.uk

You can also contact the research supervisor via email: Dr Kate Williams – kate.williams@uwtsd.ac.uk

If you have any immediate questions, please ask the researcher now. If you are happy to continue, please read, complete the consent form.

Appendix (C)

Consent form



PG2 / E1 FORM



Centre for Psychology and Counselling
SA1 Campus
Swansea

Participant Consent Form**Title of Study: Music and emotion expression**

Research Team: Student Researcher: Afsana Begum (2204410@student.uwtsd.ac.uk) and Supervisor: Dr Kate Williams (kate.williams@uwtsd.ac.uk) .

Date:

1. I confirm that I have read and understand the Information Sheet for the above study.	Yes	No
2. I had an opportunity to ask questions and have them answered satisfactorily.	Yes	No
3. I understand that I may ask further questions at any time.	Yes	No
4. I understand that my participation is voluntary, and I am free to withdraw at any time during the study without penalty or giving any reason.	Yes	No
5. I understand that my fully anonymised data will be utilised for only this research study, which is being conducted by a third-year Psychology student for the purpose of their undergraduate Psychology Empirical project and will be deleted once external examiner approval for the project has been obtained.	Yes	No
6. I have been informed that if I feel I would be uncomfortable answering personal questions about my affect, engaging in listening to music, or viewing images of faces displaying negative expressions, that I should not take part in this study.	Yes	No
7. I understand that I may decline to answer any questions.	Yes	No
8. I understand that any data collected will be anonymised and stored in an anonymous format and once I leave the lab it will not be possible to trace the data back to me to withdraw.	Yes	No
9. I understand that the anonymised data provided will be securely stored and accessible only to the members of the research team directly involved in the study, and that confidentiality will be maintained.	Yes	No
10. I confirm that I am over 18 years old	Yes	No
11. I confirm I have normal or corrected-to-normal vision	Yes	No
12. I agree to take part in the above study.	Yes	No

Participant Name

Date

Participant Signature

Researcher Name

Date

Researcher Signature

There should be two signed copies, one for the participant, one retained by researcher for records.

Appendix (D)

Instructions to move from Qualtrics to SuperLab task



Please now complete the next task on the computer



Appendix (E)

Debrief sheet



PG2 / E1 FORM



Centre for Psychology and Counselling
SA1 Campus
Swansea

Participant Debrief Sheet

Title of Study: Music and emotion expression.

Research Team: Student Researcher: Afsana Begum (2204410@student.uwtsd.ac.uk) and Supervisor: Dr Kate Williams (kate.williams@uwtsd.ac.uk)

Date:

Thank you for taking part in this study.

The aim of this study was to explore the impact of positive and negative emotions experienced from listening to different genres of music on facial expression emotion detection speed and accuracy.

Through conducting a controlled laboratory study, we aimed to isolate specific variables to effectively explore the research questions, of whether experiencing a positive or negative emotion can influence attention and decision making towards stimuli conveying that emotion, and if so, is there a difference in speed and accuracy depending on the emotional valence (positive vs. negative)?

Depending upon the experimental group that you were randomly assigned to, you were either in a positive or negative music group. Therefore, we have had to use slight deception in this study to accurately assess positive/ negative emotions on speed and accuracy identifying stimuli conveying that emotion.

If you wish to withdraw your data from the study, you must tell the researcher before leaving the lab. After leaving the lab, all your data will be anonymous, and we will not be able to trace it back to you.

If taking part in this study has raised any questions or concerns, please contact the researcher: Afsana Begum on 2204410@student.uwtsd.ac.uk or contact the research supervisor: Dr Kate Williams on kate.williams@uwtsd.ac.uk

Appendix (F)

SPSS output

PANAS reliability (positive and negative)

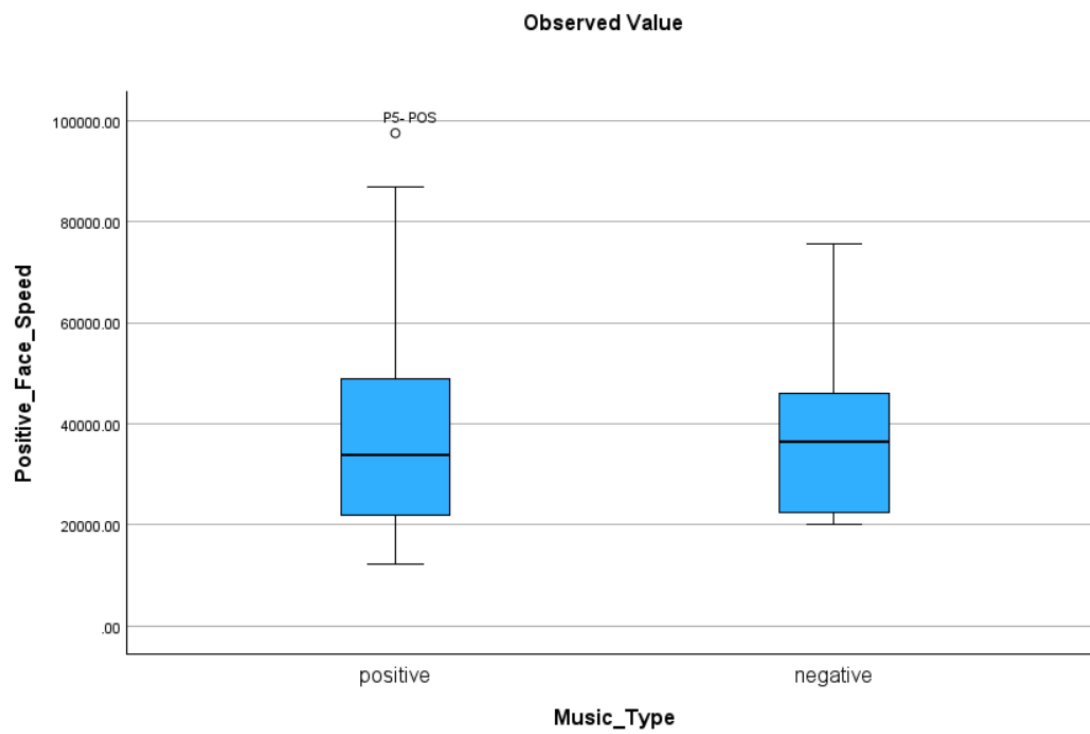
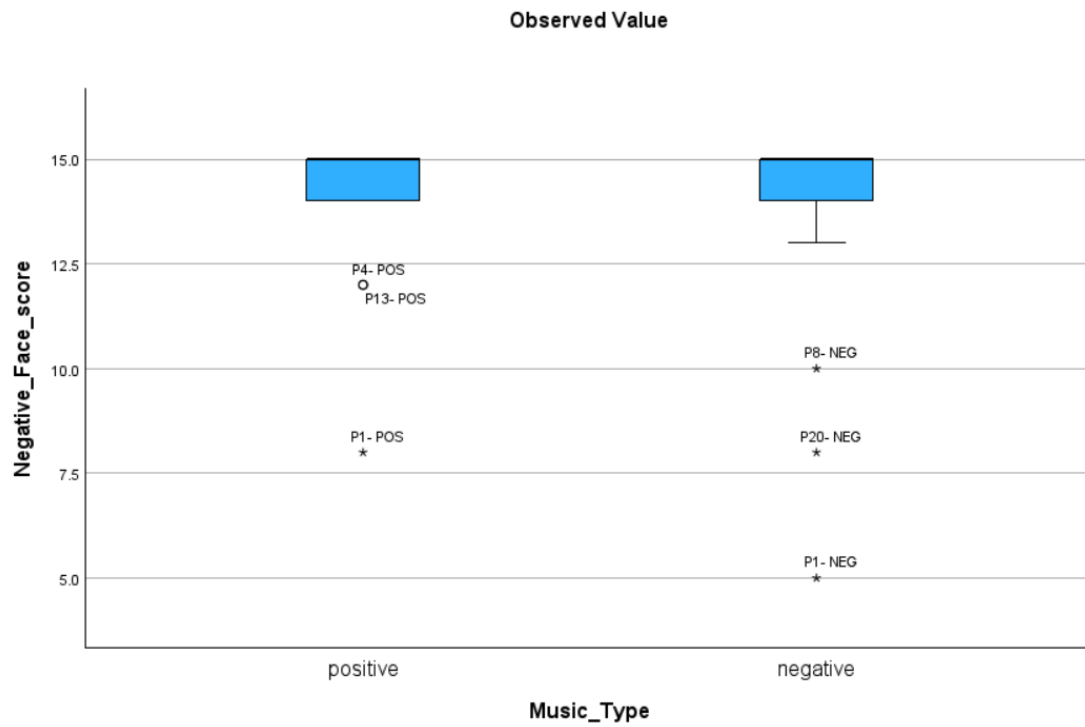
Reliability Statistics

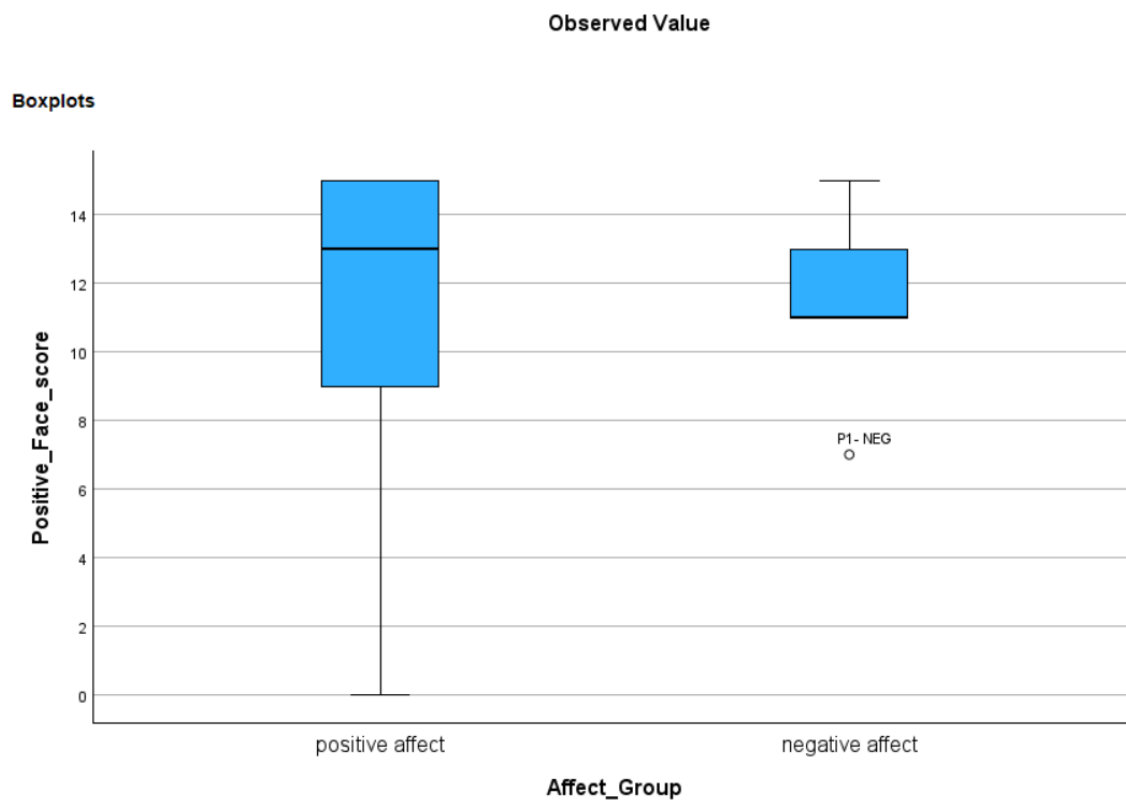
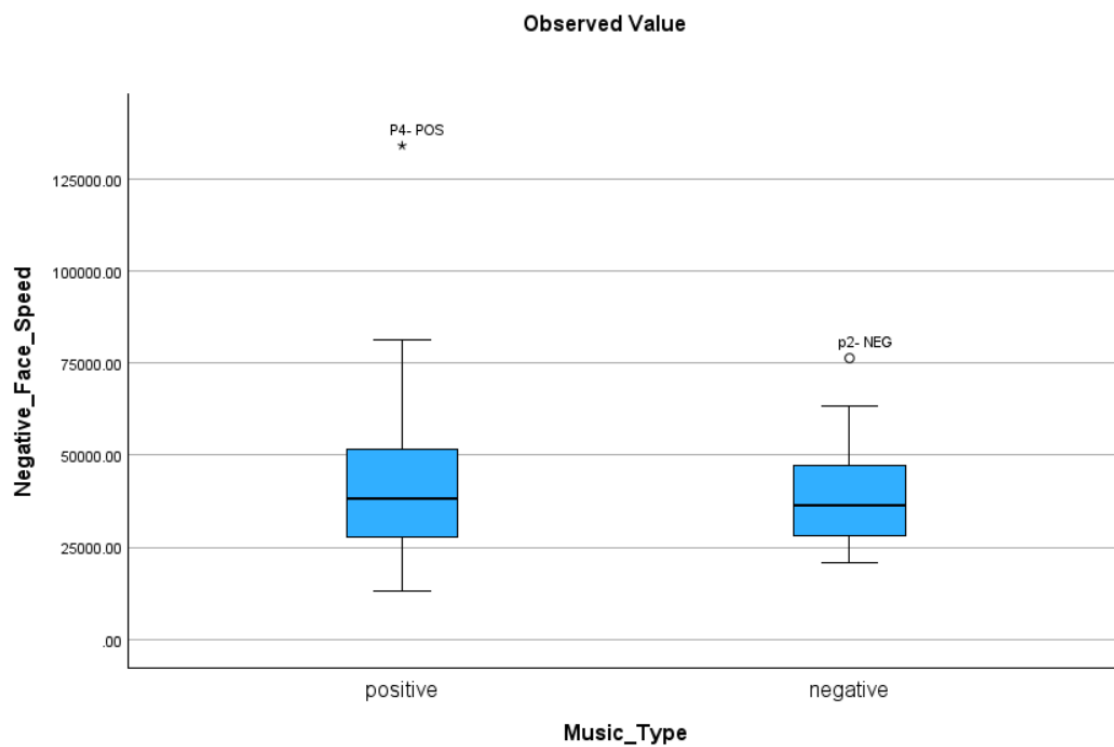
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.930	.929	10

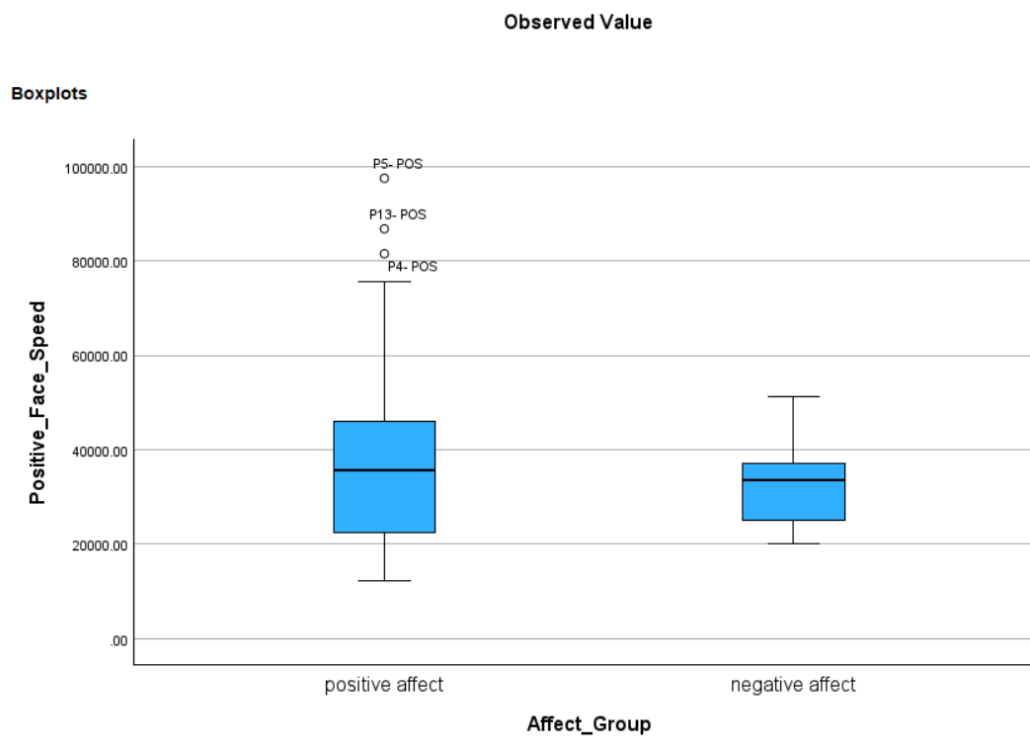
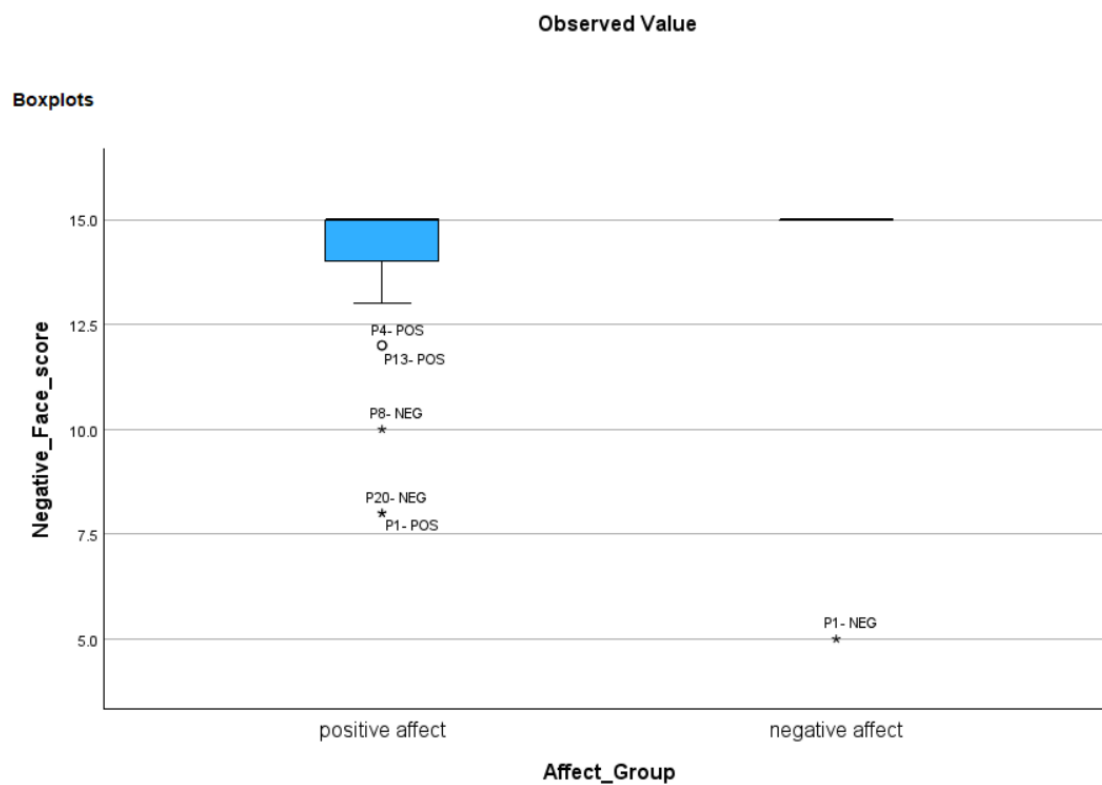
Reliability Statistics

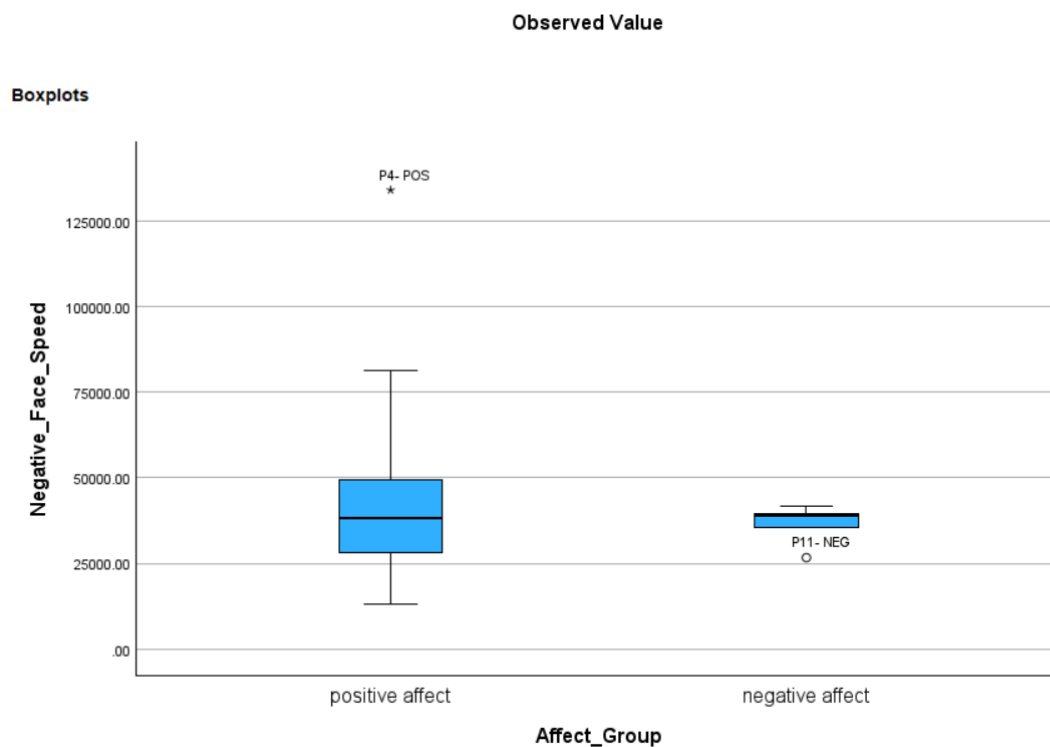
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.915	.928	10

Test of normality









Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age	33	20	53	28.15	8.216
Gender	33	1	3	1.88	.415
Valid N (listwise)	33				

➔ Frequencies

Statistics

Gender

N	Valid	33
	Missing	0

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	5	15.2	15.2	15.2
	Female	27	81.8	81.8	97.0
	Non-binary	1	3.0	3.0	100.0
	Total	33	100.0	100.0	

Between-Subjects Factors

		Value Label	N
Music_Type	1	positive	16
	2	negative	17
Affect_Group	1	positive affect	30
	2	negative affect	3

Descriptive Statistics

	Music_Type	Affect_Group	Mean	Std. Deviation	N
Positive_Face_score	positive	positive affect	11.86	3.549	14
		negative affect	14.00	1.414	2
		Total	12.13	3.403	16
	negative	positive affect	11.25	4.892	16
		negative affect	11.00	.	1
		Total	11.24	4.737	17
	Total	positive affect	11.53	4.257	30
		negative affect	13.00	2.000	3
		Total	11.67	4.105	33
Negative_Face_score	positive	positive affect	14.79	.426	14
		negative affect	15.00	.000	2
		Total	14.81	.403	16
	negative	positive affect	14.56	.727	16
		negative affect	15.00	.	1
		Total	14.59	.712	17
	Total	positive affect	14.67	.606	30
		negative affect	15.00	.000	3
		Total	14.70	.585	33

Accuracy

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
faces	Sphericity Assumed	38.668	1	38.668	4.120	.052	.124
	Greenhouse-Geisser	38.668	1.000	38.668	4.120	.052	.124
	Huynh-Feldt	38.668	1.000	38.668	4.120	.052	.124
	Lower-bound	38.668	1.000	38.668	4.120	.052	.124
faces * Music_Type	Sphericity Assumed	3.504	1	3.504	.373	.546	.013
	Greenhouse-Geisser	3.504	1.000	3.504	.373	.546	.013
	Huynh-Feldt	3.504	1.000	3.504	.373	.546	.013
	Lower-bound	3.504	1.000	3.504	.373	.546	.013
faces * Affect_Group	Sphericity Assumed	.471	1	.471	.050	.824	.002
	Greenhouse-Geisser	.471	1.000	.471	.050	.824	.002
	Huynh-Feldt	.471	1.000	.471	.050	.824	.002
	Lower-bound	.471	1.000	.471	.050	.824	.002
faces * Music_Type * Affect_Group	Sphericity Assumed	2.094	1	2.094	.223	.640	.008
	Greenhouse-Geisser	2.094	1.000	2.094	.223	.640	.008
	Huynh-Feldt	2.094	1.000	2.094	.223	.640	.008
	Lower-bound	2.094	1.000	2.094	.223	.640	.008
Error(faces)	Sphericity Assumed	272.183	29	9.386			
	Greenhouse-Geisser	272.183	29.000	9.386			
	Huynh-Feldt	272.183	29.000	9.386			
	Lower-bound	272.183	29.000	9.386			

Tests of Between-Subjects Effects

Measure: MEASURE_1

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	3533.402	1	3533.402	389.873	<.001	.931
Music_Type	4.490	1	4.490	.495	.487	.017
Affect_Group	1.981	1	1.981	.219	.644	.007
Music_Type * Affect_Group	1.441	1	1.441	.159	.693	.005
Error	262.826	29	9.063			

Speed

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
faces	Sphericity Assumed	83171509.656	1	83171509.656	2.966	.096	.093
	Greenhouse-Geisser	83171509.656	1.000	83171509.656	2.966	.096	.093
	Huynh-Feldt	83171509.656	1.000	83171509.656	2.966	.096	.093
	Lower-bound	83171509.656	1.000	83171509.656	2.966	.096	.093
faces * Music_Type	Sphericity Assumed	12841626.131	1	12841626.131	.458	.504	.016
	Greenhouse-Geisser	12841626.131	1.000	12841626.131	.458	.504	.016
	Huynh-Feldt	12841626.131	1.000	12841626.131	.458	.504	.016
	Lower-bound	12841626.131	1.000	12841626.131	.458	.504	.016
faces * Affect_Group	Sphericity Assumed	4365159.399	1	4365159.399	.156	.696	.005
	Greenhouse-Geisser	4365159.399	1.000	4365159.399	.156	.696	.005
	Huynh-Feldt	4365159.399	1.000	4365159.399	.156	.696	.005
	Lower-bound	4365159.399	1.000	4365159.399	.156	.696	.005
faces * Music_Type * Affect_Group	Sphericity Assumed	11078875.230	1	11078875.230	.395	.535	.013
	Greenhouse-Geisser	11078875.230	1.000	11078875.230	.395	.535	.013
	Huynh-Feldt	11078875.230	1.000	11078875.230	.395	.535	.013
	Lower-bound	11078875.230	1.000	11078875.230	.395	.535	.013
Error(faces)	Sphericity Assumed	813201391.43	29	28041427.291			
	Greenhouse-Geisser	813201391.43	29.000	28041427.291			
	Huynh-Feldt	813201391.43	29.000	28041427.291			
	Lower-bound	813201391.43	29.000	28041427.291			

Tests of Between-Subjects Effects

Measure: MEASURE_1

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	24427801639	1	24427801639	82.103	<.001	.739
Music_Type	52055895.951	1	52055895.951	.175	.679	.006
Affect_Group	3674130.738	1	3674130.738	.012	.912	.000
Music_Type * Affect_Group	9859894.394	1	9859894.394	.033	.857	.001
Error	8628282843.8	29	297526994.61			